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THE ROLE OF THE CLINICAL LIBRARIAN IN AUSTRALIA:

A MIXED METHODS INVESTIGATION

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ABSTRACT

Health care has become a complex and pressured enterprise. Clinicians depend on information from many sources to incorporate into the delivery of safe, appropriate patient care. The skills and functions of clinical librarians have the potential to assist patient care teams to address their information and evidential needs. Clinical librarianship has been established for many years and much of the knowledge on the role is drawn from international literature. There is little known about the way in which clinical librarianship is being practised in Australia.

The purpose of this research is to investigate the role of the clinical librarian in Australia. In examining the roles and function of the clinical librarian attention was focused on the skills required and the activities undertaken in Australian healthcare settings. A pragmatic mixed methods approach was used to collect both quantitative and qualitative data, with a sequential explanatory design. The first phase of the study was an online survey distributed to a health librarian e-list, and the second phase was semi-structured interviews with librarians in hospital settings. Integration of the results occurred in the discussion phase.

This study is the first to provide baseline data about clinical librarians in Australia. Results showed that clinical librarians in Australia perform many of the same activities as clinical librarians elsewhere. Literature searching, information skills training and information delivery are core activities. Communication skills were universally rated as essential. The role is library based and fits the model of a tailored reference outreach service. Participation in ward rounds was not common but journal clubs, grand rounds and clinical meetings were attended in order to interact with clinicians. The clinical librarians in this study had a strong belief in the advanced nature of their knowledge and skills, and this was more pronounced than in other international studies.

The clinical librarian role lacks consensus within the library profession as to the defining function and features. This makes it hard to distinguish the position from other health librarian roles and to develop appropriate measures for skills and knowledge. Further areas for research include benchmarks and accreditation for expert searching and critical appraisal; scope of practice and avenues of collaboration of clinical librarians with other health information professionals such as informaticians; and partnerships with health consumers.

STATEMENTS AND DECLARATIONS

DECLARATION OF ORIGINALITY

This thesis contains no material which has been accepted for a degree or diploma by the University or any other institution, except by way of background information and duly acknowledged in the thesis, and to the best of my knowledge and belief no material previously published or written by another person except where due acknowledgement is made in the text of the thesis, nor does the thesis contain any material that infringes copyright.

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STATEMENT OF ETHICAL CONDUCT

The research associated with this thesis abides by the international and Australian codes on human and animal experimentation, the guidelines by the Australian Government's Office of the Gene Technology Regulator and the rulings of the Safety, Ethics and Institutional Biosafety Committees of the University.

Signed:

Date: 15/01/2019

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1 INTRODUCTION

A constant question for information professionals is how best to meet the needs and requirements of their clients. Technology offers so much and yet the challenge remains to bring the best available information in an appropriate form and timely manner to the person wanting it. The more information there is, the greater the necessity to be able to find what is required when it is needed. One response by librarians in the health domain is the development of clinical librarianship, a specialised service or program aiming to contribute to improving the effectiveness and efficiency of patient care (Perrier et al., 2014; Scherrer & Dorsch, 1999; Sollenberger & Holloway Jr, 2013).

The challenge for librarians in the health arena is how best to bring the information professional's skills and expertise to clinicians, and thus ultimately to patient care (Brady & Kraft, 2012; Wagner & Byrd, 2004; Weightman & Williamson, 2005). Clinical librarianship is a model of information service, which aims to take this knowledge out into the clinicians' work environment rather than remain within the library (Aitken, Powelson, Reaume, & Ghali, 2011; Brettle et al., 2011; Harrison & Beraquet, 2010; Tan & Maggio, 2013; Wagner & Byrd, 2004; Ward, 2005; Winning & Beverley, 2003). In moving outside the walls of the library, information professionals aim to integrate within the multi-professional team to improve the quality and delivery of information used in practice, and to anticipate the needs of clinicians in order to enhance timeliness and relevance of information being provided (Brettle et al., 2011; Claman, 1978; Harrison & Beraquet, 2010; Schacher, 2001). Clinical librarians also educate and support clinicians to develop and improve their information retrieval and management skills (Schacher, 2001).

1.1 Background

The genesis of the clinical librarian was partly prompted by the recognition that doctors and medical students were being challenged to keep up with ever increasing volume of medical information (Arcari & Lamb, 1977). Since the late 1960s this

situation has only become more complex. Evidence-based practice and continued technological advancement require clinicians to develop a sophisticated skill set that enables them to find and assess information and integrate new knowledge or research into practice. Not only has the volume of information continued to grow, but also it is available from a variety of publishers, platforms and programs. The existence of information, however, does not equate to availability, and the availability of information does not mean it is integrated into practice (Craven, Koppel, & Weiner, 2014b, p. 61). Barriers such as individual abilities with searching and critical appraisal, having a position in which it is possible to affect change, and organisational attitudes to integrating evidence-based practice, can hinder integration (Brown, Wickline, Ecoff, & Glaser, 2009).

Further impetus for the clinical librarian program was the observation that clinical questions went unanswered during ward rounds. Research suggests this is often because a decision was made to not pursue finding an answer or because the question was too difficult (Ely, Osheroff, Maviglia, & Rosenbaum, 2007 ; McKibbon & Fridsma, 2006). McKibbon & Fridsma (2006) also note that physicians do not always recognise when they need information. The number of clinical questions that go unanswered has remained fairly stable over time, and these questions represent at least half of those raised in patient care (Del Fiol, Workman, & Gorman, 2014). This has implications for safety and quality, patient outcomes and continuing professional development. Craven, Jones and Zipperer (2014a, p. 43) consider literature searching skills as an “important element of safety”, and that lack of proper, robust processes around information presents opportunities for harm and system errors.

Information and research-based evidence are highly important in health care, and there are a plethora of health information systems and resources to be accessed and utilised. Electronic and digital developments have been both exciting in the ways in which delivery has become sophisticated and pervasive, but also overwhelming in the amount of information available, with clinicians drawing on many sources to aid their decision-making (Florance, Giuse, & Ketchell, 2002). Health care professionals

need to be familiar with databases, clinical decision support tools, electronic health records, telemedicine and personalised medical developments (Hersh et al., 2014).

In addition to health and medical information, evidence-based practice is an additional area of knowledge required of health professionals. Evidence-based practice aims to bring together clinical practice, patient values and best available evidence into the clinical decision-making process (Sackett, Rosenberg, Gray, Haynes, & Richardson, 1996). Clinicians are expected, and being educated, to be able to find and use evidence for patient care. Information seeking in the current health environment requires a range of skills and knowledge (Hersh et al., 2014). A clinician needs to be able to formulate a question in such a way that it can be answered and create the search strategy that will retrieve relevant information. They need an appreciation of the appropriateness of the available resources for the clinical question and know how to adapt the strategy to optimise the search within the different resources, including use of the various search functions to tailor the results. After retrieving the results, the next steps are to critically appraise the content and decide whether to incorporate the findings into the care for a patient, and how best to do so (Moore & Association of Academic Health Sciences Librarians, 2011; Scherrer & Dorsch, 1999; Weng et al., 2013). Clinical librarians with their skills set of literature searching and appraisal are well placed to assist clinicians with evidence-based practice (Dalrymple, 2002).

Clinical librarians have been actively participating in the training of clinicians to use resources to retrieve information and the skills of appraisal, as well as offering literature searching services (Harrison & Sargeant, 2004; Tan & Maggio, 2013; Ward, 2005; Winning & Beverley, 2003). It is important for clinicians to be able to find and assess information for themselves. At present, research suggests when they do undertake a search they are successful some 80% of the time (Davies, 2007; Del Fiol et al., 2014; Hersh et al., 2014). However, other researchers have found there is a discrepancy between what clinicians need versus what they find. It has been found they access resources less than nine times per month and only retrieve 25-50% of relevant material (Moore & Association of Academic Health Sciences Librarians,

2011). But, the time and the facilities to pursue clinical questions at the point of care are often not available, and the sources of information to be searched can encompass both published and unpublished information. All clinician groups find a lack of time to be a barrier to seeking information (Del Fiol et al., 2014; Djulbegovic & Guyatt, 2017; Ebenezer, 2015; Haigh, 2006).

Clinical librarianship at inception supported a medical model of clinical interaction. That is, the medical librarian joined the physicians and medical students on ward rounds. Although ward rounding is now more usually a multi-professional activity, the focus of clinical librarianship is still predominantly with doctors and medical students (Haigh, 2006; Winning & Beverley, 2003). Nurses and allied health professionals information needs have yet to receive similar levels of scrutiny (Ebenezer, 2015; Weng et al., 2013). Information behaviour investigations that have been undertaken suggest there are differences in approach and skills between clinicians. In part these differences might reflect the various stages of the patient journey, but also the contribution of the different disciplines. Nurses, for example, require information for patient care and to update personal knowledge but they also need information to support patient education (Ebenezer, 2015; Westbrook, Gosling, & Coiera, 2004). Nurses and allied health professionals frequently utilise personal and network connections to share and seek information (Haigh, 2006; O'Leary & Ni Mhaolrunaigh, 2012).

The clinical librarian role supports clinicians ideally at the point of decision-making and this has traditionally been seen to mean participation in ward rounds as part of a multi-professional team (Harrison & Beraquet, 2010; Roper, 2015; Winning & Beverley, 2003). The skills brought to the patient care team by the clinical librarian are information management and retrieval, recognising when a matter is an information need and formulating it into a question and being able to analyse the literature in order to supply relevant information (Schacher, 2001). Research has shown clinical librarians to have saved clinicians time in seeking information, improved informed decision-making, influenced diagnosis and treatment plans for patients and reduced costs through the provision of information (Brettle et al., 2011;

Perrier et al., 2014; Sollenberger & Holloway Jr, 2013; Tan & Maggio, 2013). Furthermore, clinical librarians are able to provide relevant search results, which the research suggests means they are capable of correctly interpreting clinical queries and supplying information that clinicians find useful (Brettle et al., 2011). There are concerns, however, that the studies used to demonstrate these impacts are poor in quality and that a more realistic assessment is to be made in terms of contribution to care, rather than direct impacts on patient outcomes (Brettle, Maden, & Payne, 2016).

Clinical librarians are a specialist role within the field of health librarianship. The role differs from the health librarian through having a closer relationship and knowledge of a particular client group, and integrating in the clinical teams (Health Libraries Inc., 2013; Winning & Beverley, 2003). A census conducted in Australia in 2014-15 estimates a workforce of 1,250 in health library and information sciences, of whom 760 were health librarians (Kammermann, 2016b). Hospitals maintain the biggest health libraries (Health Libraries Inc., 2013), and according to the medical practitioners workforce 2015 web report (Australian Institute of Health and Welfare, 2016), 43.9% of medical practitioners work in a hospital or outpatient service. The Nursing and Midwifery Board of Australia (2017) reported 282,412 general registrations for registered nurses in Australia for the period October-December 2017.

Clinical librarians have the potential to assist a great many health care professionals, but finding ways in which to do this effectively and sustainably is an ongoing demand of the role. Library services in health care contribute financially as well as clinically to the delivery of care and services (Peterson, Harris, & Siemensma, 2015), and a report on the economic value of Australian health libraries estimated that health libraries “return an average of $9 for every dollar invested” (Health Libraries Inc., 2013, p. 6). Given the continued potential of clinical librarians to support and enhance the delivery of patient care through service provision and working partnerships with clinicians, this investigation into the role in the Australian context is relevant and important.

1.2 Researcher background

My profession is librarianship and I have experience working in public libraries, academic libraries and organisation specific libraries. Most recently, I have worked with clinicians for over eight years in a hospital setting. My role was one of library client service supporting the staff of the hospital to provide patient care through the provision of information resources and services. Although I worked with clinical and non-clinical staff, I worked most closely with nurses and allied health professionals. Through this relationship I came to appreciate the difficulties that surround patient care, clinical practice and information. Both the questions and the resources were complex. In particular, it was clear that there are significant factors, both physical and behavioural, which influence information seeking and retrieval. In addition, there is the necessary skill and confidence required to appraise the suitability of the information obtained for the particular context of need.

The questions which have come to preoccupy me are the lines between professional roles and expertise when working in multidisciplinary environments and how best to support clinicians with information management. In this project, the word information will generally refer to that in published sources as opposed to clinical information systems, even though there looks to be a move towards a more integrated approach to health information in organisations. Evidence-based practice aims to bring together clinical practice, patient values and best available evidence into the clinical decision-making process. Finding and evaluating information that is the “best available evidence” from an information professional’s point of view raises the questions: just who should do this – the clinician or librarian/information professional? Or rather, when is it the clinician and when is it the librarian’s responsibility? If it is a shared role, how is it best facilitated and, how can the expertise of the information professional be best integrated into the multidisciplinary team?

This research project offered a way to start considering some of these questions. The clinical librarian role has appeal as a way to engage with clinicians in their work environment. A closer relationship between a clinical librarians and clinicians has the potential to improve understanding for both groups. For clinicians they gain greater access and support to information management expertise and for librarians they gain the opportunity for greater understanding of clinical practice and patient care, and attendant information issues.

1.3 Research problem

There is little known about the way in which clinical librarianship is being practised in Australia. There are clinical librarians working in the health system as evidenced by job advertisements and conference papers. However, there is scant published information on the role in this country.

1.4 Research question

The purpose of this research is to investigate the role of the clinical librarian in Australia. The research will focus on the roles and function of the clinical librarian – what are the skills required and the activities being practiced in Australian health settings. Understanding the skills and activities will assist in determining how the role sits within a health library information service, as well as how the role relates to the clinical domain and what it has to offer to patient care teams. Demonstrating the value of the role is not the primary concern of this investigation, but a belief that it has benefits does underlie why this area of investigation is considered important. A study on the closing of health sciences libraries found that the loss of literature searching, training and information delivery services following closures had a serious impact on clinicians (Schwartz & Elkin, 2017). Knowledge and expertise with information science can enhance the incorporation of evidence into clinical practice and management through partnerships and teamwork.

1.5 Research design

A pragmatic mixed methods approach was taken to collect descriptive data to explore this area of health librarianship. The use of both quantitative and qualitative methods provides the opportunity to gain a more detailed picture of those who work as clinical librarians and what they do. Qualitative findings can contribute to better supported explanations for the quantitative data (Fidel, 2008). Information services are a complex blend of technical knowledge and social understanding, and thus require methods of inquiry that illuminated the ways in which the activities, skills and human dynamics operate together in a particular setting to provide a more complete appreciation of the role (Doyle, Brady, & Byrne, 2016; Venkatesh, Brown, & Bala, 2013).

1.6 Significance and contribution

Given the paucity of information on the role in Australia this investigation will make a useful contribution by providing descriptive baseline data on clinical librarianship in this country. Transformations in health organisation and delivery are affecting librarians and the services they provide. Evidence-based health care remains vital and librarians have knowledge and skills which can contribute to the clinical care provided by health professionals. Safety, quality and improvements to the delivery of care to patients depend on clinicians having high quality, reliable information with which to make decisions and provide appropriate effective care.

1.7 Structure of thesis

Chapter 1

This first chapter gives the background to the research problem and its scope and significance. There are six further chapters – literature review, methods, results of

the survey, results of the interviews, discussion and conclusion – which will address the area of research for this investigation.

Chapter 2

The literature review is an overview that will describe the evolution of clinical librarianship, its distinctive features as a professional role, discuss the issues identified in the literature and why there is a need for further investigation in the Australian setting.

Chapter 3

The methods chapter discusses the mixed methods research design using a pragmatic approach, which was adopted to investigate the research question. It will explain the two-phase sequential explanatory design used to gather both quantitative and qualitative data.

Chapter 4

This chapter reports the findings of the survey, which was the first phase of the inquiry. The survey was designed to gather baseline descriptive data on clinical librarians in Australia. It combined closed, open and ranking questions. The areas of interest were the role, skills, knowledge and activities performed by clinical librarians.

Chapter 5

This chapter reports the findings of the interviews, which were the second phase of the inquiry. Semi-structured interviews were conducted to gather more in depth data on the role of clinical librarians. As with the survey the focus was on the role, skills, knowledge and activities.

Chapter 6

In this chapter the results of the two phases are synthesised and discussed. The discussion includes consideration of job titles, knowledge, outreach services and standards for skill competencies. The findings from the Australian context are compared to the role as described in other studies and literature.

Chapter 7

This chapter gives a summary of the thesis, followed by a description of how the study is relevant for health librarianship, its strengths and limitations and suggestions for future directions

2 LITERATURE REVIEW

This descriptive literature review examines the role of the clinical librarian as it has developed over time in order to understand requirements of the skills and functions involved in its practice. It describes the evolution of the role, and the definitions, activities, skills and models that have been identified as significant features. Following this, is a discussion of the role as described in the literature, concluding with a justification for further exploration of the role in the Australian setting.

Given the close focus on the role and functions of the clinical librarian a descriptive literature review was adopted to present the origins and context of the area of interest for the study. Traditional or descriptive reviews situate the topic by identifying and presenting the existing knowledge from the literature (Couglan & Cronin, 2017). A weakness with such an approach is that the selection of references can be subjective and it can be difficult for others to assess the completeness of the research undertaken for the review (Jesson, Matheson, & Lacey, 2011). A description of the search strategy adopted for this literature review can be found in Appendix 3.

2.1 Introduction

The care of a patient requires many things, and one of those things is information. The patient journey has instances in which questions are raised in order to provide the most appropriate and effective care. Research by Del Fiol et al. (2014) has shown that more than half of the questions raised in practice by clinicians go unanswered. The data to answer clinical questions is drawn from numerous sources, including patient history, diagnostic test results, guidelines, policies and published research. Information drawn from published sources needs to be relevant, quality assured and evidence based (Brettle et al., 2011).

The growth of biomedical information has been enormous and continues apace; and information technology has provided many tools and resources to manage and access this information. In the wake of the growth in medical literature has come the rise of evidence-based practice in healthcare, which seeks to enhance the basis of decision making through critical thinking and evaluation of research (Coughlin & Cronin 2017; Djulbegovic & Guyatt 2017). Evidence-based medicine as a term was introduced in 1991, and is concerned with "integrating knowledge gained from the best available research evidence, clinical expertise, and patients' values and circumstances" (Dickersin Straus & Bero 2007 p. s10). A number of factors besides the increasing body of health and medical information contributed to the development of evidence-based practice. This included the recognition that clinical practices needed improving, that research designs or the conduct of research can have flaws, and that there is a flow-on to improved effectiveness and safety in healthcare if practice and decision making is based on reliable authoritative knowledge (Barker 2016; Sur & Dahm 2011; Dickersin 2007). Brettle et al. (2016) found clinical librarianship to have significant impact on evidence-based practice.

Barker et al. (2016) note a major concern with evidence-based practice is whether clinicians have the required skills and knowledge to appropriately retrieve and appraise available evidence. Clinicians must be able to take information and transform it into knowledge that can be applied in practice (Hamer 2005). They need to be adept at creating an answerable question, knowing which resource best addresses the question, searching or using the tools to retrieve information, reading and appraising it for applicability to the patient in particular; and making the time to do so in a busy health care system (Davies, 2007; Hersh et al., 2014).

One response from medical librarianship has been the development of a specialised role termed clinical librarian. The intention of this role is to be an intermediary between the clinician and biomedical information by becoming a member of the patient care team (Harrison & Beraquet, 2010; Ward, 2005; Winning & Beverley, 2003). This role emerged in the early 1970s in the United States and has fluctuated but persisted over the last forty years or so, with limited uptake in other countries.

Sargeant and Harrison (2004) comment the 1990s were a time of renewed interest in clinical librarianship, which coincides with the emergence of the term evidence-based medicine in 1991 (Dickersin, Straus, & Bero, 2007). It is estimated that only about 12% of United States and Canadian libraries have clinical librarian programs (Davidoff & Miglus, 2011).

The clinical librarian is a multifaceted and complex position requiring both information science expertise and interpersonal qualities (Harrison & Beraquet, 2010). It would appear to be well received and used by those clinicians who have had exposure to it, and contributes to improving clinicians' information seeking behaviour and continued professional education, as well as saving time (Winning & Beverley, 2003). Although the literature suggests it has impact on, and direct benefits for, patient care this is difficult to measure, and poor research designs used to date have not helped to definitively answer this question (Brettle et al., 2011). Criticism of the role has been it is labour intensive and thus costly (Guessferd, 2006). The role also requires the librarian has the flexibility to be with clinicians outside the library and this can be problematic for library services to offer and sustain. Other issues for the role centre on qualifications, appropriate knowledge bases and standard definitions and models.

Librarians in health settings are working in an environment challenged by funding, evolving information technologies, publishing and data management developments and increasingly fluid lines between the information sciences, knowledge management and informatics (Hallam et al., 2010). The clinical librarian role looks to offer a way for medical libraries to engage with their largest constituents – health care professionals – to provide tailored information services that respond to and support their specific informational and educational needs for patient care.

This literature review will examine the roles and functions of clinical librarians to provide a context with which to compare the practice of clinical librarianship in Australia with that reported in the literature. In considering the clinical librarian position, two questions will frame the investigation of the literature:

How is the role of clinical librarian defined?

What do clinical librarians do in their role?

2.2 Origins

Clinical librarianship has been in practice for some forty years. During this time, it has continued as a specialised program within the health and medical library field but remains a relatively niche area. Gertrude Lamb is credited with pioneering the clinical librarianship program at the University of Missouri-Kansas City School of Medicine in 1971 (Guessferd, 2006; Winning & Beverley, 2003). She was the medical librarian at the university and began attending rounds so that she could better understand the education needs of the medical undergraduates. On the rounds Lamb observed the clinicians were raising questions that went unanswered - “I went out as a member of the patient care team...and I discovered that all of those team members had information needs and they were never met.” (Lamb, as cited in Detlefsen, 2015, p. 121).

In response to the needs Lamb identified on rounds, a pilot program - where librarians were assigned to particular patient care teams - was undertaken. The librarians conducted literature searches on clinical concerns raised by the teams and supplied relevant articles to address the questions, ideally on the same day. The program also had a continuing education role through the provision of information, and by modelling effective information searching (Lamb, 1984; Lusher, 1999). For Lamb, the emphasis of the program was on managing information by focusing on the user instead of the subject (Lamb, Jefferson, & White, 1974, p. 521).

The novelty of the clinical librarianship program lay in the librarian spending time outside the library with the patient care team – most often through attending forums such as ward rounds, morning report or case conferences. The other distinguishing

factor was the librarian would review articles to assess appropriateness rather than simply supply a bibliography or list of citations to the team (Lamb, 1984).

Lamb's pilot incorporated the assumptions that librarians are capable of identifying user information needs with at least 90 per cent of accuracy, and there would be a high degree of agreement between the judgements of the librarians and the clinicians on the relevance of the retrieved items to fulfil the request or need (Algermissen, 1974). Gertrude Lamb described clinical librarians as being part of:

> An information system in which information is brought to the point where it's most needed for decision-making, and [it] is done most effectively by a medical librarian, rather than some other team member, because that medical librarian has two unique skills that I think are unique to librarianship, one of which is the librarian knows how to ask a question, and then knows how to access the literature quickly (Lamb,1985, cited in Detlefsen, 2015, p. 121)

The service innovation devised by Lamb introduced the term *clinical medical librarian* (Library of Congress Federal Research Division, 2013). In the grant application for the pilot program the title initially given to the position was Science Information Specialist. This was subsequently changed to Clinical Medical Librarian (CML) because it "more clearly indicates their profession and its environment" (Algermissen, 1974, p. 354).

By 1993 in the United States it was estimated there were 29 clinical librarian programs (Winning & Beverley, 2003) and this figure had grown to about 200 programs by 2005/6 (Klein-Fedyshin, 2010). In the UK by 2002 it was estimated there were 14 clinical librarians (Sargeant & Harrison, 2004) and two investigations undertaken in 2004 and 2007 both had 26 respondents suggesting an increase in the number of clinical librarians since 2002 (Harrison & Beraquet, 2010; Ward, 2005) – or an increase in librarians identifying that a clinical relationship was part of their

purview. The Hill (2008) report estimated there were around 50 clinical librarians nationally in the UK.

The emergence of clinical librarianship in Australia occurred later than overseas and was first identified in South Australia in the late 1990s (Eriksson & Michener, 2009). In 2004 the results of two studies on an informationist role in an Adelaide hospital were published. At that time the authors noted “Australia has virtually no CML [clinical medical librarian] experiences” (Sladek, Pinnock, & Phillips, 2004a, p. 94) and only four undocumented instances of clinical librarian positions were identified (Sladek, Pinnock, & Phillips, 2004b, p. 510). Since that time the Australian literature on clinical librarianship, such as it is, has been limited to conference papers describing individual programs (Eriksson & Michener, 2009; Foxlee, 2003; Harrison, 2008).

2.3 How is the role defined?

The role was developed to improve the dissemination of information to clinicians and to establish the librarian as a valid member of the health care team. As a specialised outreach program it was viewed as a complement to traditional library services (Cimpl, 1985). Cimpl suggests that modified programs that do not include attendance on rounds can still meet the purposes of the original conception of the clinical medical librarian.

In the literature a re-occurring observation is the lack of agreed title designation for clinical librarians, suggesting an overall lack of definitive qualities or meaning. A variety of job titles such as clinical librarian, clinical medical librarian, clinical informationist, clinical information specialist, outreach librarian, informationist librarians or clinical effectiveness librarian are being used (Brettle et al., 2011; Grefsheim et al., 2010; Harrison & Beraquet, 2010). One study found “14 distinctly different job titles” from a sample of 26 participants in a survey conducted on clinical librarianship in the UK (Ward, 2005, p. 28). Another survey of UK clinical librarian

practitioners found that of the 26 participants only 12 held the title clinical librarian (Harrison & Beraquet, 2010). A study of job advertisements in the UK stated there was consistency in the usage of the title clinical medical librarian in America but in the UK there were a greater number of alternative position titles (Sargeant & Harrison, 2004). However, despite the array of job titles, the positions all share the aim of the providing the best evidence to identified clinical teams.

Definitions for the clinical librarian role usually include three elements:

> *Who* the information is for, such as health professionals, health care team, or patient care team;
>
> *What* t*ype* of information, such as customised, targeted, quality assured, evidence-based, case-specific or case-related;
>
> *Context* such as decision-making, clinical care, patient bedside or point of need.

Lamb described the clinical librarian as “A medical librarian [who] is assigned to an inpatient service and attends rounds and conferences with the patient-care team” (Arcari & Lamb, 1977, p. 18) and subsequently she referred to the role bringing information to the point of decision-making “where it’s most needed” (Lamb, 1977, as cited in Detlefsen, 2015, p. 121).

Early definitions in the literature describe the clinical librarians as

> “medical literature specialists who accompanied physicians and medical students on rounds, then returned to the library to search for pertinent care-related articles” (Cimpl, 1985, p. 21)
>
> or

> “We "take the library to the user" on the hospital ward, in the out-patient clinic, and in the medical school teaching areas; (2) We anticipate our users' questions and often provide information before they have asked for it (Claman, 1978, p. 455).

The role as explained by these definitions is a library-based position that seeks to take the librarian out of the library into the clinicians’ workplace. The information supports patient care and possibly, given medical school teaching activity, also the education of medical students and junior staff. The emphasis is on being in a different workplace in order to establish, understand and support information requirements.

A more recent definition describes the role as aiming “to support clinical decision-making and/or education by providing timely, quality-filtered information to clinicians at the point of need” (Winning & Beverley, 2003, p. 12). Another clinical librarian definition says they are “Individuals with a library science degree who, in the context of a patient care team, provide customized services to meet information needs related to patient care” (Tan & Maggio, 2013, p. 64). These definitions have refined the role, which has become less bound by space and activity (i.e. libraries and ward rounds), and has become more focused on client groups and their context.

Point of need is not often defined, but one attempt to do so gives “the place where the healthcare professional first requested support in any setting…this could be within or outside the library or via a computer system… point of need could be identified passively by the clinicians themselves or proactively by the clinical librarian engaging with the clinical team” (Brettle et al., 2011, p. 6). Online resources and service provision are changing the way clinicians and information professionals interact. The dependence on physical presence is not as essential for communication and requests for information. However, one study noted that requests for information that were made verbally (either in a telephone call or face to face) had higher satisfaction ratings with the librarian’s interpretation of the request

than those requests made via email or online forms (McKeown, Konrad, McTavish, & Boyce, 2017).

2.4 Clinical informationist

The conceptualisation of clinical librarianship has been further challenged by a development suggested from Davidoff and Florance in 2000. In an editorial they proposed a new role, which they termed as "informationist", to address the "neglected and disorderly state" (Davidoff & Florance, 2000, p. 998) of medical information retrieval. In their opinion clinical librarianship had not gained traction because of a lack of funding, coupled with a possible ambivalence on the part of clinicians to have assistance in seeking information. The informationist position would be one in which the incumbent would be trained in both information science and the "essentials of clinical work"' (Davidoff & Florance, 2000, p. 997) allowing individuals to come from either a library or clinical pathway. Clinical knowledge encompassed biostatistics, clinical epidemiology, basic medical concepts and critical appraisal. In addition, the position would report to a clinical head and be funded directly by the clinical department and not the library. The informationist role would be to "retrieve, synthesize, and present medical information routinely" for the healthcare teams (Rankin, Grefsheim, & Canto, 2008).

Definitions for informationists or clinical informationists include

> "Clinical health professional with added qualification, gained through graduate education or experience, which enable that individual to work collaboratively and on an equal footing with medical and health professionals to meet information needs that arise during both direct patient care and medical research" (Detlefsen, 2002, p. 59)

and

> “A clinical informationist is a professional member of the healthcare team who focuses on the intersection between clinical care and the evidence base contained in the literature and in biomedical databases and resources. The informationist acts as an expert in identifying and addressing the complex evidentiary needs of the team” (Giuse et al., 2005, p. 249)

The role as described in both the above has an authoritative footing within the clinical team because of expertise and qualifications, which is absent from the clinical librarian definitions. The informationist however, like the clinical librarian, is there to facilitate information retrieval and dissemination for clinical care (Grefsheim et al., 2010).

The Medical Library Association in 2002/2003 adopted another term “information specialist in context” (ISIC) to reflect the diversity of health settings in which informationists work (Sathe, Jerome, & Giuse, 2007). There were 36 ISIC positions within the National Institutes of Health centres working in clinical or research teams by 2006 (Shipman, 2007). An estimate has been made that one in twenty medical libraries in the United States and Canada uses the informationist model for information delivery (Davidoff & Miglus, 2011). Both informationist and ISIC appear to have more traction in the United States than elsewhere.

The informationist editorial written by Davidoff and Florance in 2000 met with mixed reaction, with some in the library profession claiming it was no more than a rebadge of the clinical librarian (Sathe et al., 2007; Schacher, 2001). The points of difference between the informationist and clinical librarian is seen as the extent of the clinical knowledge base and the level of integration with the clinical team, as well as the provision of appraised and summarised information (Giuse, Sathe, & Jerome, 2006; Sladek et al., 2004a).

There is an ambiguity with expression and language within the literature that makes it difficult to determine at times whether the terms informationist and clinical librarian are being used synonymously or distinctively. There is an opinion the library and information science profession has a lack of understanding as to how the informationist role differs to the clinical librarian role (Rankin et al., 2008).

2.5 What do clinical librarians do?

> "intermediary, educator and disseminator" (Winning & Beverley, 2003, p. 11)

The setting in which the majority of clinical librarians' work is a hospital, and most probably a university affiliated teaching hospital (Tan & Maggio, 2013; Wagner & Byrd, 2004; Winning & Beverley, 2003). They are often assigned designated clinical departments or units such as paediatrics or internal medicine, and typically the number of such units supported is small - one or two but it may be more (Wagner & Byrd, 2004). Although commonly medically focused, clinical librarians may also be found working in multidisciplinary, nursing and/or allied health teams (Winning & Beverley, 2003).

A consistent assertion made about the role is the responsiveness to the particular context in which the clinical librarian operates. The activities and interactions will vary because they are determined by the organisation, and/or the professional health care teams (Brookman, Lovell, Henwood, & Lehmann, 2006; Tan & Maggio, 2013; Winning & Beverley, 2003). Clinical librarians can participate in various clinical activities or locations including ward rounds, case conferences, journal clubs, grand rounds, committee or departmental or unit meeting, clinicians' offices or conference rooms (Tan & Maggio, 2013; Winning & Beverley, 2003). A recent survey found grand rounds and case conferences are more commonly attended than bedside rounds (Lyon, Kuntz, Edwards, Butson, & Auten, 2015, p. 315).

2.6 Expert searcher/disseminator

It appears the one universal activity performed by clinical librarians is literature searching. It is regarded as at least a major component, if not an essential or core skill (Harrison & Beraquet, 2010; Sargeant & Harrison, 2004; Tan & Maggio, 2013; Ward, 2005; Winning & Beverley, 2003). Bibliographies or citation lists are the most usual output of literature searching, often accompanied by the search strategy as well (Wagner & Byrd, 2004; Ward, 2005). The broad dissemination of information is a feature of literature searching output (Brookman et al., 2006; Tan & Maggio, 2013; Winning & Beverley, 2003). Frequently, the information supplied by the clinical librarian in response to a clinical question will be shared amongst the clinical team and/or department members.

Critical appraisal of the literature or provision of digests for a clinical question is not a common undertaking (Wagner & Byrd, 2004; Winning & Beverley, 2003). The amount of time required to appraise literature plus a lack of clinical knowledge on the part of clinical librarians, coupled with ambivalence on the part of clinicians as to the appropriateness of librarians filtering the results, have limited this activity (Ward, 2005).

2.7 Teacher/educator

Information skills training is a routine activity undertaken by many, but not all, clinical librarians (Tan & Maggio, 2013; Wagner & Byrd, 2004; Ward, 2005; Winning & Beverley, 2003). Instruction might happen during rounds or in journal clubs, and may be informal or structured. Training can cover matters such databases, critical appraisal, and reference management (Tan & Maggio, 2013). The inclusion of a clinical librarian on rounds for some clinicians is about fostering or modelling information seeking behaviour. The interaction encourages asking and developing questions as well as obtaining evidence and knowledge of information resources (Eriksson & Michener, 2009).

The educative function works two ways. Working in the clinical environment provides librarians with exposure to the patterns of work and information needs of health care professionals in context, which enhances their understanding and knowledge (Eriksson & Michener, 2009; Foxlee, 2003). This leads to the clinical librarians being able to better tailor information delivery both by anticipating needs and by supplying highly relevant material (Wagner & Byrd, 2004; Winning & Beverley, 2003).

2.8 Interpersonal

A consistent theme on effective performance in the role is that it requires more than expertise alone. The ability to foster trust and to develop rapport and good working relationships with clinicians is deemed highly important (Brady & Kraft, 2012; Brookman et al., 2006; Harrison & Beraquet, 2010). Harrison and Sargeant (2004, p. 221) found in their study that participants generally "believed that personal qualities were more important than "actual knowledge". A proactive, entrepreneurial approach is required to take advantage of opportunities, gain acceptance and adapt to a different working environment (Brady & Kraft, 2012; Harrison & Sargeant, 2004; Lyon et al., 2015). Communication skills, being able to listen and to present information, are also crucial (Brady & Kraft, 2012; Lyon et al., 2015).

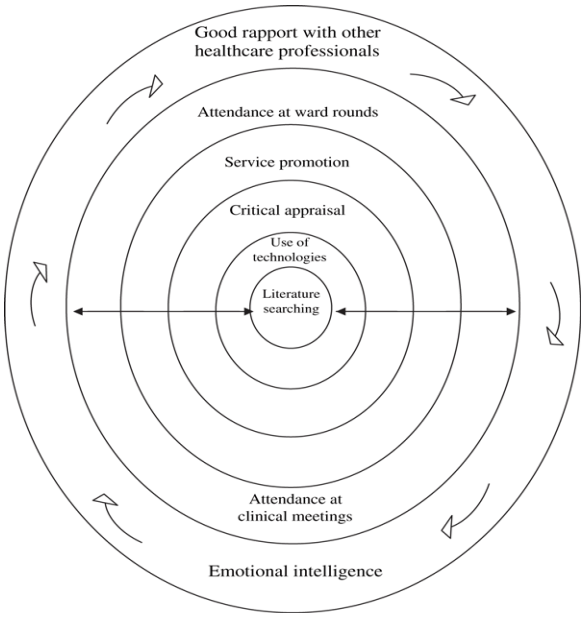
The role of clinical librarian has an affective dimension commented on in some of the literature. Being with the patient care team on the ward rounds can be an emotional experience which some clinical librarians have found challenging (Foxlee, 2003; Lyon et al., 2015). One survey found librarians attending rounds were personally affected by factors such as odours, wounds, disruptive patients, trauma patients and deaths of patients. This same study also noted the degree of acceptance by patient care teams was another stressor for clinical librarians, particularly if they felt under-utilised (Lyon et al., 2015).

2.9 Clinical librarian models

The literature notes two factors about clinical librarianship. Firstly, there is a lack of a single model of service (Brookman et al., 2006); and secondly, the idea that there is a continuum for the role, which extends from a service provided entirely from within the medical library to those who operate in clinical teams and departments, is not clearly distinct (Weightman & Williamson, 2005). In so far as there are suggestions of models they appear to be defined by the places in which clinical interaction happen, so that attendance on walking rounds is one model whilst journal clubs and grand rounds can be another (Ward, 2005; Weightman & Williamson, 2005; Winning & Beverley, 2003).

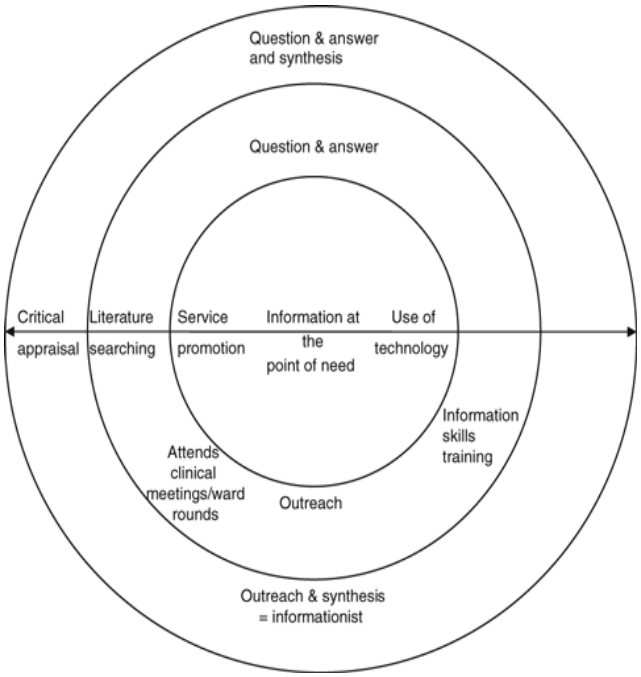
Research in the UK has focused on attempting to understand the role so that it can be recognised and standardised across the health service. Two studies undertaken in the UK have attempted to articulate clinical librarian models and these differ in approach to the “situated” models. Harrison and Beraquet (2010) derived a framework they called the UK clinical librarian model (Figure 1). The basis of the model was drawn from research they had undertaken, along with findings in the literature on the skill and activities of clinical librarians. The model is visualised as a circular diagram that places literature searching as the core activity. Ringing around this core are the skills of being able to use technology, perform critical appraisal and promote the service. Further out are the activities of attendance on wards and clinical meetings. The final outer ring displays having good rapport with clinicians and possessing emotional intelligence(Harrison & Beraquet, 2010).

Figure 1. UK clinical librarian model (Harrison & Beraquet, 2010)



Brettle et al. (2011) took the UK clinical librarian model and modified it through a focus on the service delivery as part of a systematic review of clinical librarian services (Figure 2). In the process of conducting the review the authors became interested in the idea that the differing role titles might reflect patterns of service provision. Four models of clinical librarian service provision were identified, which were: question and answer service, question and answer service with critical appraisal, outreach, and outreach with critical appraisal. The latter model they suggest most closely matches the informationist role as proposed by Davidoff and Florance (2000). They found the use of the job title clinical librarian was more consistently used for positions that fell into the outreach service model. Outreach service uses “a pro-active approach to engage the users, perhaps as part of the team” (Brettle et al., 2011, p. 12) through various activities including literature searching, journal clubs, training and ward rounds, and outreach was the most common model in the UK. Their model placed the skills and activities from the Harrison & Beraquet (2010) model across the four service options.

Figure 2. Model of clinical librarianship (Brettle et al., 2011)



2.10 Clinical librarianship in Australia

In Australia, clinical librarianship lagged behind the United States and United Kingdom. It has been suggested it was in the late 1990s that librarians embarked on attending ward rounds in South Australia (Eriksson 2009). Sladek et al. (2004a, p. 94) stated, “Australia has virtually no CML [clinical medical librarian] experiences”, and could only find four undocumented cases when undertaking their study at the Repatriation General Hospital in Adelaide. Since then conference presentations and job advertisements suggest there are clinical librarians in Australia, however there remains a paucity of documentary evidence on the role and practitioners.

A study was undertaken in South Australia in two phases - firstly a feasibility study, and then a pilot study to investigate the likely usage by doctors of an informationist service in a hospital setting. The informationist attended ward rounds and clinical meetings, and provided a “written evidence-based summary” of the best evidence retrieved to answer “case related clinical questions about in-patients or outpatients” (Sladek et al., 2004b, p. 510). The findings were that clinicians did use the service,

the role contributed to decision-making and education and there was a perception by the participants that the information provided contributed to improving care (Sladek et al., 2004b).

Two conference papers on clinical librarian programs in Queensland describe the experiences of working with clinical teams. One of these papers reported on a program that had been running for six years in which the librarians attended ward rounds (Eriksson & Michener, 2009). Questions were answered within 48 hours, and mix of abstracts, article extracts and full text were provided in response. A lack of formal feedback made it difficult to evaluate the service however it was noted that sustainability was the “most pressing issue” (Eriksson & Michener, 2009, p. 9). The other paper was an earlier one describing a librarian attending admitting rounds in a hospital. In this report questions related mainly to diagnosis and prognosis, and the aim of the involvement of the librarian was not only to incorporate evidence at the point of care but also as a professional development mechanism for clinicians (Foxlee, 2003). However as the role continued it was found that searching dominated activity rather than search skills training or modelling. Both conference papers note the challenge of moving into the clinical environment and being present with ill patients.

A census of health libraries was conducted in Australia, as there is a general lack of workforce data for the sector. The 2014-15 census revealed that the health libraries workforce is predominantly female, there is a concentration of services in NSW, Queensland and Victoria, and hospital libraries remain strongly represented. The number of health librarians was estimated to be 760, and the number of health library and information services as 328 (Kammermann, 2016b, p. 3).

Results from this census showed that 30% of health libraries offered clinical / informationist / liaison / embedded librarian services (Kammermann, 2016b). The health libraries and information services sector, however, is diverse and the respondents to the census could be working in hospitals, universities, government departments and health services, research institutes, medical and pharmaceutical

industries and community organisations. This means that some of the 30% nominating clinical / informationist / liaison / embedded librarian services are likely to be including roles that are different to the one being investigated in this study.

2.11 Discussion

Clinical librarians provide a specialised service tailored to the interests and requirements of the health professionals in their organisation. In this service, they act as intermediaries between clinicians and sources of information that will best address the questions raised in the care of patients, as well as from other activities such as research, publishing or presentations. The clinical librarian will search for information, assess the results for relevance and reliability and disseminate what is found to the clinicians. They are also educators, either through direct training on finding and using information and resources, or by modelling the processes involved.

Certain features in the role continue to remain open to debate and resolution. Foremost is whether clinical librarianship has distinct features, which distinguish the role from the medical or hospital librarian. In terms of skill and function there are naturally, commonalities. Librarians, be they clinical, medical, health or hospital, all perform literature searching and information skills training. They supply bibliographic information and documents in response to clinical questions. They teach or demonstrate databases and other resources and how to use them. Their client groups are the clinicians and other professional health care staff in their organisations or facilities.

The similarities might help explain the emphasis in the literature for the need for the “soft skills” that is communication, emotional intelligence, being able to work in a team and build rapport with health care professionals. The differentiating nature of the role is the way it operates in a different work environment to support clinicians. To do this successfully the clinical librarian needs to possess personal qualities and

additional skills that will facilitate interpersonal relationships, and enhance the delivery of information (Harrison & Beraquet, 2010).

The crux of the difference seems to lie in the identification of, and a relationship with, a particular clientele. Traditional medical library service has tended to be a reactive relationship in which clinicians make contact with the librarians when they have need for information. The librarians work within the space of the library to manage, retrieve and supply information. The types of information needs are wide and varied and the service can be characterised as being generalist in nature – “jacks of all trades” when it comes to subject matter and focus. In using the designation clinical librarian, the intention is to signal the focus is on clinicians in a proactive way, both in terms of physicality of place and nature of interaction and anticipation of needs.

Clinical librarianship has features that appear to work against a standardised prescription of the role. As has been discussed, job titles vary and yet the people holding them are seen to be fulfilling the same roles and functions. How clinical librarians relate to clinicians is emphasised as having to be responsive to context and situation – no one size fits all. An explanation for this diversity might partly lie in the service orientation of libraries – what Bates (1999, p. 1049) terms an “empowerment oriented value system” by which she means the library is looking to produce a desired social outcome. Clinical librarians are driven to provide a service that is desired by their clinical groups, and so the activities and the ways in which they relate to the groups is reflective of those desires. Information science seems to be afflicted by inexact terminology and variety of nomenclature (Chowdhury, 2007), and whilst this ambiguity is seen as a strength by some (Polger, 2010), it has a potential downside in that it makes shared meaning difficult. The distinctions in the roles of medical librarian and clinical librarian are increasingly difficult to define given that medical librarians have adopted a more proactive approach in general. In the past forty years the ethos of outreach and notions of “embeddedness” have diffused into general library practice. Technology in particular, has permitted and created opportunities to work in different ways with library client groups.

In addition, there appears to be an undercurrent of tension on the type of clinical activity defining the clinical librarian role. Tan and Maggio (2013, p. 70), for example, refer to what they believe is a tendency to use attendance on ward rounds as the "ultimate indicator" of embeddedness, with which they disagree. This is a sentiment echoed by Brookman et al. (2006) who also notes that clinical librarians however must be highly visible to health care professionals. Regular clinical contact is viewed as essential to maintain knowledge of health professionals needs as well as promotion of the clinical librarian role (Winning & Beverley, 2003). Furthermore, clinicians want information for other activities besides patient care, such as publication, presentation, research and continuing education so other venues than rounds are relevant for clinical librarians (Winning & Beverley, 2003). The study by Brettle et al. (2011) usefully suggests viewing the role from a service perspective. This settles the role into a library context of information service delivery.

Do clinical librarians need clinical knowledge in order to function effectively with healthcare professionals? This is partly the impetus behind the informationist debate, that is, there is a level of domain knowledge and qualification that is needed to be both more "able" in the role and to be accepted as a peer within the team. Another view is that information science is a "meta" discipline – that is, it has processes and approaches that are about the ways in which to manage recorded information and is not dependent on a "deep subject expertise" (Bates, 1999, p. 1046) to do so. Information science professionals, such as librarians, bring to the patient care team a particular set of skills and knowledge that are unique and support evidence-based practice. However, the library profession is divided in general on the need and depth of subject specialisation, and the study by Lyon et al. (2015) found the participants greatly desired topical knowledge including medical terminology, as well as health care organisation and systems. Until there are more robust definitions regarding the role it will be difficult to provide the right training and credentialing to properly support it.

2.12 Chapter summary

The health care system and patient care is complex and busy, and clinicians have to manage information needs and clinical questions on the go. The skills and functions of clinical librarians have the potential to assist patient care teams to address their information and evidential needs. The title of the role is used to signify a client group relationship or type of service but it is not standardised and librarians can be working to the same end but with a different role designation. Notwithstanding how it is conceived to meet the particular context of an organisation, the expertise and experience of the information science professional has value as a part of the information service systems available to health care professionals.

There are positions that are designated, as clinical librarian in Australia however there is very little published information. Job advertisements and conference papers suggest there are such positions in Queensland, Northern Territory, New South Wales and Victoria, at the very least. The intention of this study is to gather data about the role and functions of clinical librarians working in Australian hospital settings through a survey and follow-up interviews.

The next chapter discusses the methodology that will be used to investigate the research question. An explanation of the research design approach as well as the methods employed to collect and analyse the data are described.

3 METHODOLOGY

The previous chapters described the rationale and background for this investigation into clinical librarianship. This chapter describes the research methodology and methods used in this study. The initial sections deal with the methodological approach of a pragmatic mixed methods design, which was adopted for this study, with a sequential explanatory approach utilising a survey and interviews. Pragmatism as a framework fitted with the aim of understanding the current context and practice of clinical librarianship in Australia. Seeking quantitative and qualitative data was considered important as organising, managing and delivering information are complex tasks, and the use of mixed methods research was viewed as offering the opportunity to gain a stronger understanding of the role. Following sections in this chapter include research design, participant recruitment, data collection and data analysis procedures for the two methods used in this study.

3.1 Introduction

Library and information science is concerned with "the interaction between individuals and information. In every area of [library and information science] research, the connection of factors that lead to and influence this interaction is increasingly complex" (Togia & Malliari, 2017, p. 59). Scott and Briggs (2009, p. 236) argue health informatics requires a "plurality of methods" because it encompasses information technology, social sciences and medical practice. Library and information science for those in health and medical librarianship involve the same mix of disciplines, with an emphasis on how people use information, and how service providers can improve design and delivery of information (Ma, 2012). Context is also an important consideration for information behaviour (Greifeneder, 2014).

The literature review revealed the paucity of published information about how clinical librarianship is being practised in Australia. This study aims to gather data on the

role and functions of clinical librarians working in Australian hospital settings using a mixed methods research design. Both quantitative and qualitative methods were used in this study. The intention was for the research to have a descriptive focus rather than seek statistical significance.

The quantitative phase of the research aimed to collect descriptive data to provide a picture of the current situation in Australia, and the qualitative phase aimed to provide some understanding of how clinical librarians experience their role. The purposes for which researchers use mixed method design include triangulation, expansion, exploration, completeness or illustration (Doyle et al., 2016). In this research a mixed methods approach offered both completeness and illustration as the activities, settings and other descriptive survey data do not entirely capture the complexity of working with information and the relational aspects of the role. The two approaches together provided a richer investigation of the area of interest.

3.2 Pragmatism

Paradigms, or worldviews, are a system of beliefs about the "ways of experiencing and thinking about the world, including beliefs about morals, values, and aesthetics." (Morgan, 2007, p. 50). As such they influence the way in which a research question can be approached or framed, through focusing the researcher's decisions on what questions to ask and what methods to use to investigate the problem (Morgan, 2007; Shannon-Baker, 2016). As already indicated this study sought to understand the role of the clinical librarian, which is considered to be a complex undertaking (Brettle et al., 2016; Wu & Mi 2013), and required a methodology that would facilitate gathering data that allowed for the complexity, but manageable within a short time frame with one investigator.

Pragmatism is a paradigm often associated with mixed methods research (Creswell & Clark, 2007). A pragmatic design looks to "what works" and will use diverse approaches to the research through being guided by the primacy of the research

question and valuing objective and subjective knowledge (Creswell, Klassen, Plano Clark, & Smith, 2011). It has been called the third research movement and is "inclusive, pluralistic and complementary", and it offers an

> immediate and useful middle position philosophically and methodologically; it offers a practical and outcome-orientated method of inquiry that is based on action and leads, iteratively, to further action and the elimination of doubt; and it offers a method for selecting methodological mixes that can help researchers better answer many of their research questions (Burke Johnson & Onwuegbuzie, 2004, p. 17).

According to Shannon-Baker (2016, p. 322) it is "characterized by an emphasis on communication and shared meaning-making in order to create practical solutions to social problems" and seeks a balance between subjectivity and objectivity; and Morgan (2007) sees the degree of shared understanding and then shared lines of behaviour from those understandings as being key issues. It permits the researcher the discretion to determine which methods will best address the question under investigation. Pragmatism recognises the distinctive features of quantitative and qualitative methods but argues they are also "commensurate" (Doyle et al., 2016, p. 625) or have compatibility, and with shared sets of beliefs (Tashakkori & Teddlie, 2008). It aids the advancement of knowledge production through a combination of action and reflection, experience and experimentation (Biesta, 2010; Doyle et al., 2016; Grbrich, 2017).

3.3 Quantitative and qualitative research

Quantitative and qualitative designs are drawn from different paradigms. The quantitative paradigm views reality as being fixed and able to be objectively measured. Quantitative approaches are based on the existence of scientific truths which can be observed and measured (Gerrish & Lacey, 2010). Characteristics of quantitative research include deduction, confirmation, theory/hypothesis testing,

explanation, prediction, standardised data collection and statistical analysis, generalisability and replication (Burke Johnson & Onwuegbuzie, 2004; Grbrich, 2017).

The qualitative paradigm sees there are multiple truths because people construct reality from the meanings they attribute to their experiences, and as such qualitative methods are used to investigate complex questions (Gerrish & Lacey, 2010; Vaismoradi, Turunen, & Bondas, 2013). Characteristics include subjectivity, induction, discovery, exploration, theory/hypothesis generating, researcher as primary instrument of data collection and qualitative analysis (Burke Johnson & Onwuegbuzie, 2004; Grbrich, 2017). This type of research is inclusive of the "voices of participants" through the use of quotes in the reporting (Creswell et al., 2011, p. 4).

Mixed methods has been criticised for mixing research designs that are fundamentally different and as such the mixing of quantitative and qualitative methods is inappropriate. The incompatibility thesis is based on the belief the underlying paradigms do not permit the employment of both approaches within a single study. This is because assumptions about reality and nature, which form the basis of each paradigm are too divergent (Grbrich, 2017). However, this is rejected by mixed methods researchers who argue for "methodological eclectism" and "paradigm [atic] pluralism" (Tashakkori & Teddlie, 2010a, p. 9), in order to employ the most suitable designs and paradigms to address the area of investigation. Others suggest acknowledgement of the divergence of the methods and taking them into account in the results and discussion are enough to counter the criticism (Taket, 2017).

3.4 Mixed methods research

Mixed methods research uses quantitative and qualitative approaches to answer a research question. According to Creswell and Clark (2007, p. 5) the central assertion

of mixed methods research is that the “use of quantitative and qualitative approaches in combination provides a better understanding of research problems than either approach alone”. In utilising both quantitative and qualitative approaches in a single study the intention is draw on the strengths of both, while minimising their weaknesses. Although there are two approaches used within the study, at some point the data from both had to be integrated. The data integration stage is more than separate analysis of each strand but a mixing through merging, connecting or embedding the data together. The decision to use mixed methods research is based on the research question, its purpose and the context in which the problem is situated (Venkatesh et al., 2013). It allows researchers to draw on those research designs that will best answer their question (Burke Johnson & Onwuegbuzie, 2004).

Definitions for mixed methods have been under discussion for some time, however Tashakkori and Teddlie (2010b, p. 804) believe there is a “distinct nomenclature, methodology, and utilization potential” with core shared ideas. Burke Johnson, Onwuegbuzie, and Turner (2007, p. 129) define mixed methods as being an

> “intellectual and practical synthesis based on qualitative and quantitative research; it is the third methodological or research paradigm…recognizes the importance of traditional quantitative and qualitative research but also offers a powerful third paradigm choice that will often provide the most informative, complete, balanced, and useful research results”

Mixed methods research is a “humanistic methodology closely mimicking our everyday human problem solving” (Tashakkori & Teddlie, 2010b, p. 819). It is an approach that Creswell and Clark (2007) term as practical as it allows the utilisation of observation, recording numbers and text and cycling between induction and deduction in order to arrive at a result.

There are two types of mixed methods research. One, mixed methods, involves a quantitative phase and qualitative phase within a single study; and the other, mixed

model, involves mixing the different approaches across stages of the research project (Burke Johnson & Onwuegbuzie, 2004; Taket, 2017).

Five purposes have been identified for mixed methods research:

> Triangulation: convergence and corroboration of results from different methods and designs studying the same phenomenon; increases validity.
>
> Complementarity: elaboration or illustration of results from one method with results from another method; increases interpretability, meaningfulness and validity.
>
> Initiation: discovery of paradoxes or contradictions, or new perspectives, that lead to re-framing the research question; increases depth and breadth
>
> Development: use of the findings from one method to inform another method; increase validity
>
> Expansion: using different methods for different inquiry components in order to expand breadth and range of the research

(Burke Johnson et al., 2007; Plano Clark & Creswell, 2008)

Within mixed methods research there a various designs that can be used including convergent, explanatory sequential, exploratory sequential and embedded (Doyle et al., 2016). In a convergent design the quantitative and qualitative phases are conducted concurrently with the results of one phase remaining independent of the other. There is usually equal weight given to both approaches and integration takes place at the interpretation phase (Doyle et al., 2016). The embedded design uses two different data sets in which one data set supports the other more primary data set, such as a qualitative phase within an experiment. The assumption is a single data set is insufficient to answer the different problems within the research question (Creswell & Clark, 2007; Doyle et al., 2016). In considering sequential designs Creswell and Clark (2007) state that the sequence is affected by the objectives of the research project. If the quantitative phase preceded the qualitative phase the aim is explanatory. If the approach is qualitative phase first followed by the quantitative phase then the aim is exploratory.

In an explanatory sequential design the collection and analysis of the quantitative data precedes that of the qualitative data. Priority is usually given to the quantitative data, and integration of the two methods occurs in the interpretative phase of the study. The qualitative results are used to help interpret and explain the results of the quantitative phase, and the results of the quantitative phase may have direct the development of the qualitative phase (Doyle et al., 2016; Plano Clark & Creswell, 2008, p. 178).

Exploratory sequential designs, on the other hand, begin with a qualitative phase and then the quantitative phase follows. Again, the first phase assists with the development of the second phase. This type of design is employed to answer questions about the creation of measures or tools, the development of theories or to identify variables. The qualitative phase explores the phenomenon, and the quantitative phase is used to investigate the prevalence of variables or validate a measure (Creswell & Clark, 2007; Doyle et al., 2016).

3.5 Strengths and weaknesses of mixed methods

The use of both quantitative and qualitative research to investigate a question has the value of mitigating the weaknesses of both approaches (Fidel, 2008). The use of both allows a more complete picture to be developed, as well as providing a way to attempt to answer research questions that could not be addressed by either approach on its own. The research outcomes provide stronger evidence through convergence and corroboration, along with increased generalisability (Burke Johnson & Onwuegbuzie, 2004; Creswell & Clark, 2007). In this way, the combination of quantitative and qualitative methods can be useful in understanding and explaining complex organisational and social phenomena by providing (Venkatesh et al., 2013).

There are challenges for researchers using mixed methods designs. The approach requires knowledge of both quantitative and qualitative methods and the ability to mix the data appropriately. Sandelowski (2014) cautions the on idea that the strengths and weaknesses of qualitative and quantitative research balance each other may have more to do with the knowledge of the researcher, than the approaches themselves . Concurrent designs in particular can be lengthy in terms of time, although both concurrent and sequential can be time consuming. The design requires the ability to manage various procedures, and the researcher needs to be able to communicate the findings and results clearly. Finally it can also be expensive (Burke Johnson & Onwuegbuzie, 2004; Creswell & Clark, 2007).

3.6 Methods

A sequential explanatory design was chosen in this mixed methods research study. A sequential design involves the use of one type of data collection method followed by another method, such as a survey followed by interviews. The findings are based on the integration of both data sets (Halcomb, Andrew, & Brannen, 2009).

The research was undertaken sequentially in two phases. The first phase was an online survey distributed to a health librarian e-list, and the second phase was semi-structured interviews. The data analysis of both phases was conducted after the completion of the interviews. The quantitative data has more weight than the qualitative data as descriptive quantitative data was seen as lacking on clinical librarianship in Australia. Integration of the results from both data collection phases occurs in the discussion of the study.

3.6.1 Ethics

The University of Tasmania Social Science Human Research Ethics Committee gave approval for this project (Minimal risk application Ref No: H0015722). Consideration of the principles of confidentiality, respect and beneficence was undertaken when designing the study. The survey was prefaced by an introductory

email explaining the purpose of the research and promising confidentiality. The questions in the survey and interviews were framed so that possible harms were minimised and possible benefits were maximised for the participants. The researcher was sensitive to the knowledge that the health librarian community in Australia is relatively small. It was important not inadvertently identify a participant by reporting response data in such a way that others might be able to deduce who they were.

If an individual clicked through to undertake the survey this was considered as consent to participate in the study. All responses were anonymous. The method by which an individual could express interest in being a participant in the follow up interview was designed to keep survey responses separate so that the potential interviewee could not be identified in the survey data. Participants in the interviews were asked before the interview commenced for their consent to proceed.

3.7 Phase 1 Survey

3.7.1 Survey design

An online survey was designed using SurveyMonkey software. The researcher devised the questions. The questions were informed by other surveys found in the literature review but the survey was not a replication of a validated instrument, as the researcher did not find such a tool. During the development phase the survey was pretested with the researcher's supervisors and professional colleagues to gain feedback. The survey did not include control. The length of time for a participant to complete the survey was estimated to be approximately twenty minutes.

The survey consisted of 31 questions divided into four sections: structures, activity and skill, clinical outreach and demographics (Appendix 1). The structures section sought information about job titles, reporting lines, settings and position purpose and model. Activity and skills had questions about knowledge, skills, attributes and activities and clinical outreach covered interaction and activity with clinicians.

Demographics had questions about location (state), qualifications, and employment (e.g. full time). The survey was composed of questions that were closed (rating, ranking, multiple choice) and open-ended to allow participants to describe their contexts or opinions.

3.7.2 Survey recruitment

The target population for the survey was health librarians in Australia and the sample frame used was the Australian Libraries and Information Association (ALIA) health sector interest group, Health Libraries Australia (HLA). In July 2016 HLA released a census report on health libraries and librarians in which it was calculated there are 760 health librarians and 328 health library/information services (Kammermann, 2016b). In further analysis of the data, 61 responses out of 219 indicated that the health information service provided some form of “clinical, ‘informationist’, liaison or other embedded librarian/informationist service”. When those 61 responses were restricted to 100 per cent completion of the census and which serviced hospitals, the number dropped to 30 services with some sort of clinical/informationist role, with NSW, Qld and Victoria having the highest numbers (Kammermann, 2016).

3.7.3 Survey data collection

The survey was distributed in June 2016 via an email to the members of the Australian Library and Information Association (ALIA) e-list ALIAHealth. The e-lists are forums for participants to be involved in shared areas of professional interest – in this case health librarianship. ALIA is the national professional body for librarians and information services specialists. The use of a national email list was seen as the most practical method to reach potential candidates, as there are no central or state-based registers of librarians, and position titles are probably not indicative of role judging from the international literature. The size of the sample reached by this approach is not known as the figures for registrations for the e-list was not available to this investigation. As stated above (section 3.7.2) it is estimated there are 760

health librarians in Australia, however it is probable that not all of them have joined the e-list. The email preamble for the survey encouraged sharing its existence with others who may not be on the e-list but may be interested to participating.

The body of the email gave an explanation of the purpose of the research, the criteria for participation and provided contact details for the researcher's supervisors. The criteria for participation given in the email were "I am seeking your participation in a survey on the *Roles and functions of clinical librarians/informationists in Australia*. If you are working in an Australian hospital or health care facility to provide information services and you spend part or all of your time in the clinical setting I would be interested in your input".

A link to the survey was provided permitting those who were interested to choose to participate by clicking on it, and this was assumed to indicate consent. The survey was open for two weeks. A reminder was sent towards the end of the fortnight and the closing date for participation was extended by one week.

3.7.4 Survey data analysis

The analysis was seeking to find how the data collected in this research on clinical librarianship in Australia compared or contrasted to practice overseas. A deductive thematic approach was taken to the analysis of both the survey and interview data. Thematic analysis is a method of identification, analysis and reporting of patterns (themes) within data (Braun & Clarke, 2006, p. 79). Themes "capture something important about the data in relation to the research question and represents some level of patterned response or meaning" (Braun & Clarke, 2006, p. 82). The literature review identified certain features or activities that appear characteristic of the roles and functions of clinical librarianship and these were used as basis to inform the organisation of the data. A deductive approach is driven by an analytical or theoretical interest or top down approach (Braun & Clarke, 2006). In this case the

researcher used the areas of interest developed from the literature review. The researcher undertook all analysis of the data.

The survey responses were read within the software tool SurveyMonkey several times before being exported and saved in a spread sheet. In the initial readings within the survey software, the data was read firstly as responses to the questions and then as individual participant responses. The downloaded survey data for each question was copied from the master version into new work sheets. This was the first attempt at grouping the results. Colour coding was used to mark groups of participants across the data as well as highlighting words or phrases within responses.

Open-ended responses where categorised using the themes found in the literature review. These themes were based around skills, knowledge, activities and outreach relationships. In a word document table the categories were listed in one column and responses from the survey were pasted into the column beside the appropriate category. There was data from certain questions that required categorisation separately from the established themes, such as the question asking for the primary objective of the participant's role, as the responses did not fit the already identified categories.

The descriptive statistics gathered from the survey were presented in tables and figures to summarise the findings. In the text the percentages were included to indicate the size of the responses to a given question.

3.8 Phase 2 Interviews

3.8.1 Interview design

Interviews by telephone offer a medium that is low cost, and flexible given the participants were geographically spread in other states (Block & Erskine, 2012; Parahoo, 2014). As a medium for data collection interviews are valuable for obtaining meaningful personal experience, however when conducted by telephone the interaction lacks visual cues and body language (Parahoo, 2014). The interview consisted of fourteen questions (Appendix 2). The questions stood alone from the survey in that they did not refer directly to the content of the questionnaire. However the interview questions covered the same areas of interest, asking the participants to describe the role, and the distinguishing features of role, the types of interactions with clinicians, processes activities and skills, clinical and research knowledge and factors anticipated to impact in the short-term future. The researcher took a semi-structured approach so that topics arising in the course of the interview could be followed through conducted the interviews (Gerrish & Lacey, 2010). The interviews varied in length from 30 to 60 minutes.

3.8.2 Interview recruitment

The end of the survey included an invitation to participate in interviews by emailing the researcher. This allowed participants to self-select whether they would be interviewed and kept their survey responses separate from their expression of interest. However, there were only two responses to participating in interviews, of which only one volunteer was eligible. The researcher then directly contacted the other two of the final three interview participants to ask them if they would consent to an interview. The two participants recruited by the researcher in this manner were known to be in the field of clinical librarianship because of personal professional networks from the researcher's time as a hospital librarian. Time constraints were the reason for taking this approach to recruiting for the interviews.

3.8.3 Interview data collection

Three interviews were conducted during August – September 2016. Two of the interviews were held via telephone and permission was sought from the participants to use a recording device. The other interview was administered as an email exchange, as this was the only method of communication available for this participant. The main email exchange was held over a period of one hour. There was a follow-up email exchange that was not conducted in a set time period. The follow up for the email participant occurred because the first interview proved slow and cumbersome in this format and not all the topics were covered in the initial hour. There was no follow up needed with the interviews conducted via the telephone.

3.8.4 Interview data analysis

The telephone interviews were audio recorded and transcribed verbatim (Tracy, 2012). The email responses were saved into a word document. The two telephone interview transcripts and the email interview were read for the first time. The email and telephone interview texts were then saved into one word document. As the sample size was so small (n=3) the analysis of the content was undertaken using word processing and spread sheet software.

The interview transcriptions were read several times to become familiar with the data (Braun & Clarke, 2006; Elo & Kyngas, 2008; Vaismoradi et al., 2013). Each was then re-read seeking data that appeared pertinent or of relevance to the question, and this data was highlighted. The process involved looking for patterns in the data in relation to the themes found in the literature review (Braun & Clarke, 2006). Each interview text was allocated a different colour so there was easy visual identification of where the data was drawn from when it was grouped into categories within a new word document. Use of a spread sheet followed to further refine the sorting data into categories.

The interview data was difficult to categorise as the three participants had different things to say from their experience and knowledge; and being such a small group distinctive themes did not emerge. Excerpts from the interviews were grouped together using those relevant themes from the survey data analysis. Use of the deductive approach to the analysis allows previous knowledge to be tested in different situations (Elo & Kyngas, 2008). As the aim of this research was to investigate clinical librarianship in Australia is it was useful to be able to test the findings here against what was known of the role elsewhere. As the interview questions were very similar to the survey questions with a focus on the skills, knowledge, activities and working relationships of the clinical librarian, and with all three interviewees being in hospital library services, the use of pre-identified themes was appropriate.

The final stage of data analysis was to create another word document in which the data from the open-ended responses in the survey was combined with the data from the interviews into the categories used in the analysis of both methods. This was to assist the integration of the findings from the quantitative and qualitative phases of the research in the discussion.

3.9 Chapter summary

This study used mixed methods research with a pragmatic approach to investigate clinical librarianship in Australia. Collecting quantitative and qualitative data would assist in gaining a richer understanding of the skills and activities performed by the participants within their health settings. The nature of information management and services is complex and relationship dependent, and neither method alone would provide enough insight to the role. The first phase of this sequential explanatory design was an online survey and the second phase was semi-structured interviews. Data analysis was undertaken by the researcher and used a deductive approach with the themes identified in the literature review adopted to categorise the findings.

The next chapter reports on the results of the survey and the interviews, and discusses the data in relation to questions used and pre-identified features of the role derived from the literature review.

4 RESULTS OF PHASE 1: SURVEY

4.1 Introduction

The previous chapter described the methodology and methods used in this study. This chapter reports on the findings from the survey, which was undertaken as the first phase of the research. Descriptive quantitative data was sought in order to advance knowledge about the role, practice and settings of clinical librarians in Australia.

The survey data is presented in relation to either the question asked or the pre-identified features of the role as ascertained from the literature review that was used to analyse the data. The first sections of the chapter cover the demographic, skills and knowledge data about the participants (4.1 to 4.5). The data in these sections was from questions that sought data in structured formats such as ranking responses or choosing options. Following this are more descriptive reports in sections on the model of service and roles (4.6 to 4.7). Finally the last sections (4.8 to 4.12) cover the clinical aspects such as knowledge, outreach, critical appraisal and future goals.

4.1.1 Participation

The respondents self-selected to participate in the online survey, after receiving an email asking for people to take part in it. There were twenty-one responses to the survey, of which twelve were complete and nine were incomplete. Three respondents exited the survey at Question 7, two respondents exited at Question 12 and two respondents exited at Question 22. As the numbers of participants were low it was decided to include all the responses in the data analysis and results. Low response rates are of concern as they may have implications for representativeness of the data (Parahoo, 2014), however Krosnick (1999) suggests research indicates it is possible for low response rates to provide accurate data.

4.1.2 Setting and demographics

All 21 participants answered the question on organisational setting with public hospitals (including public teaching hospitals) being the organisation setting of the majority 74% (n=15) (Table 1).

NSW was the location by state for 57% (n=8) of respondents (Table 2). As this question had a total of 14 responses it is possible there were participants from other states among the incomplete responses or who decided not to complete this question.

Table 1. Organisational setting (n=21)

Public hospitals	**15**
Subset : public teaching	10
Other	**6**
Public/private	2
State govt health services	3
Federally funded not-for-profit	1

Table 2. Location by state (n=14)

NSW	Victoria	Queensland	Tasmania	WA
8	2	2	1	1

4.1.3 Position titles

All respondents (n=21) gave a position title, of which only two positions included the word clinical (Table 3). Within the librarian position titles 57% (n=7) there were a number of qualifiers such as health or health service, electronic services, academic liaison, training and education, and acting medical librarian. Four positions were given as librarian only.

Table 3. Title of current position (n=21)

Clinical librarian	Library manager	Librarian	Librarian plus qualifier	Library technician	Health information coordinator	Library/ Information officer
2	4	4	7	1	1	2

The majority of participants (64%) had been in their current position for 5 years or less (Figure 3). There were 14 responses to the question of employment basis, with 7 being full-time, 5 being part-time and there was 1 on contract and 1 as casual. Many of the positions have been created in the last 10 years, with 35% (n=7) of positions having been created within the last three years (Table 4).

Figure 3. Years in current position (n=14)

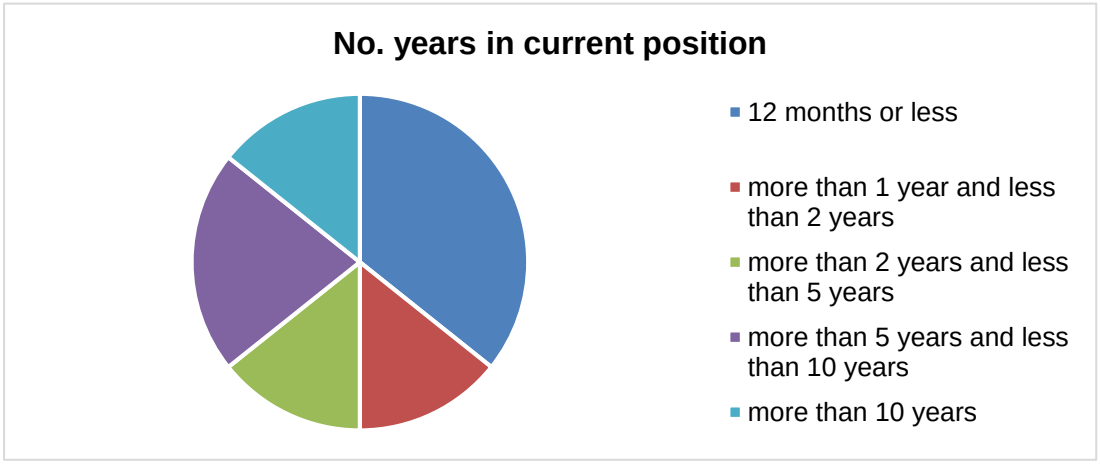


Table 4. Year position created (n=20)

2014-16	2007-09	2000s	1990s	1980s	Unsure
7	5	1	3	1	3

The most common reporting line for respondents were to a library manager 38% (n=8), or *other* 38% (n=8) (Table 5). Under *other* category the reporting lines were either clinical or education, such as director of clinical services, director of operations, director of clinical training, or manager of service development. In terms of department staffing the most common establishments in which respondents worked were 38% (n=8) in 2-3 staff teams and 33% (n=7) in 4-6 staff teams (Table 6).

Table 5. Reporting line (n=21)

Library manager	Clinical manager	Research manager	Other
8	3	2	8

Table 6. Number of staff in department (n=21)

1 staff	2-3 staff	4-6 staff	7+ staff
4	8	7	2

4.1.4 Qualifications

The responses (n=14) to the question on highest qualification attained showed a combination of bachelor, graduate diploma and master degrees (Table 7). It is possible the diploma response refers to a librarian training scheme that pre-dates the

introduction of university conferred degrees in library and information science. The disciplines were all some combination of either library science/studies, library and information science or information management/studies.

Table 7. Highest qualification achieved (n=14)

Bachelor	Graduate Certificate	Graduate Diploma	Master Degree	Diploma
4	1	4	4	1

4.2 Skills and knowledge

When asked in the survey to list the three essential skills/knowledge for their position responses included: literature searching (7 times), communication or interpersonal skills (7 times), knowledge of/about databases (6 times), knowledge of the literature (6 times), knowledge of the healthcare environment (4 times), time management (2 times), computer/IT (2 times) and teaching/training (2 times).

Responses to the question on the importance of activities resulted in literature searching rated as *essential* by 89% (n=16) and training (that is providing training in searching/information skills) was *essential* for 71% (n=12), and retrieval of information for 65% (n=11) (Figure 4). Rating of skills/knowledge resulted in communication being rated as *essential* by 100% of respondents who answered this question (n=18) (Figure 5).

Figure 4. Activities by importance (n=18)

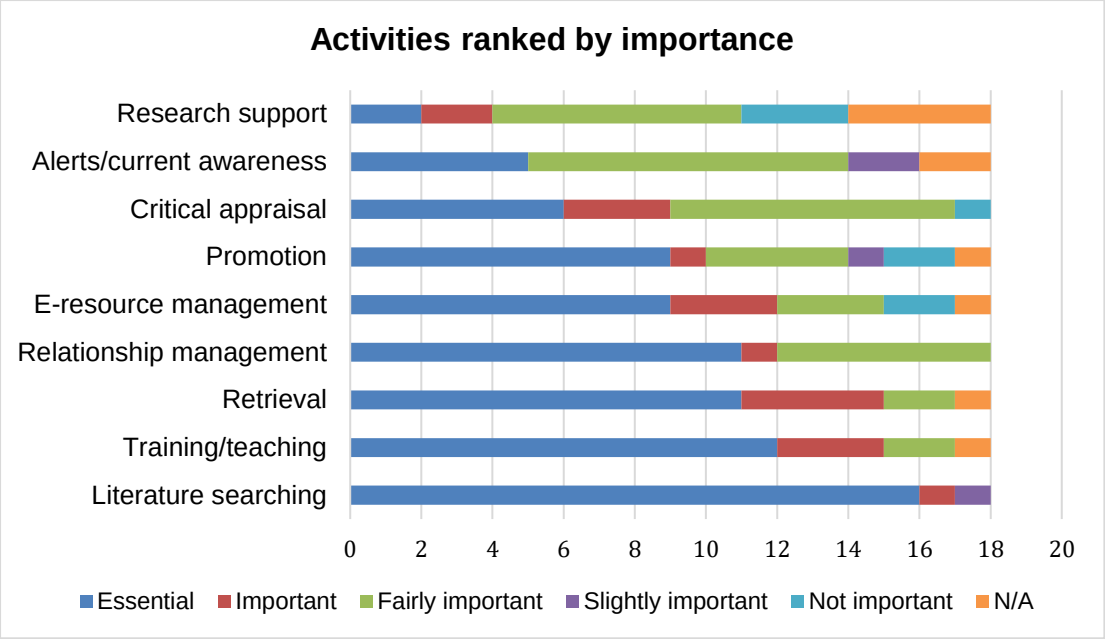
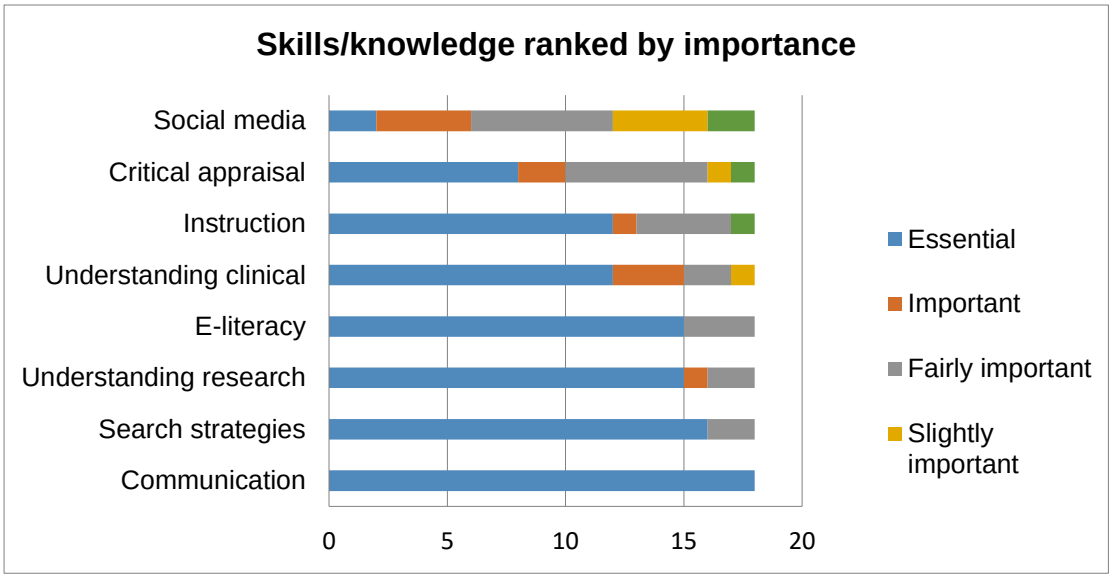


Figure 5. Skills and knowledge by importance (n=18)



4.3 Disseminator

Responses to the question on the importance of activities resulted in literature searching rated as *essential* by 89% (n=16) and retrieval of information for 65% (n=11). Literature searching was listed several times in the responses to three principle skills or knowledge for their current position, in particular as a first ranking.

The method by which literature searches are requested showed 50% (n=8) of responses nominating *email* as the most used option, followed by online forms (n=4) (Figure 6). When supplying information for a clinical query, bibliographic references are supplied *always* for 81% (n=13) of respondents and *often* for 19% (n=3) of respondents. The search strategy is supplied *always* by 62% (n=10) of respondents (Figure 7).

Figure 6. Methods for requesting literature searches (n=16)

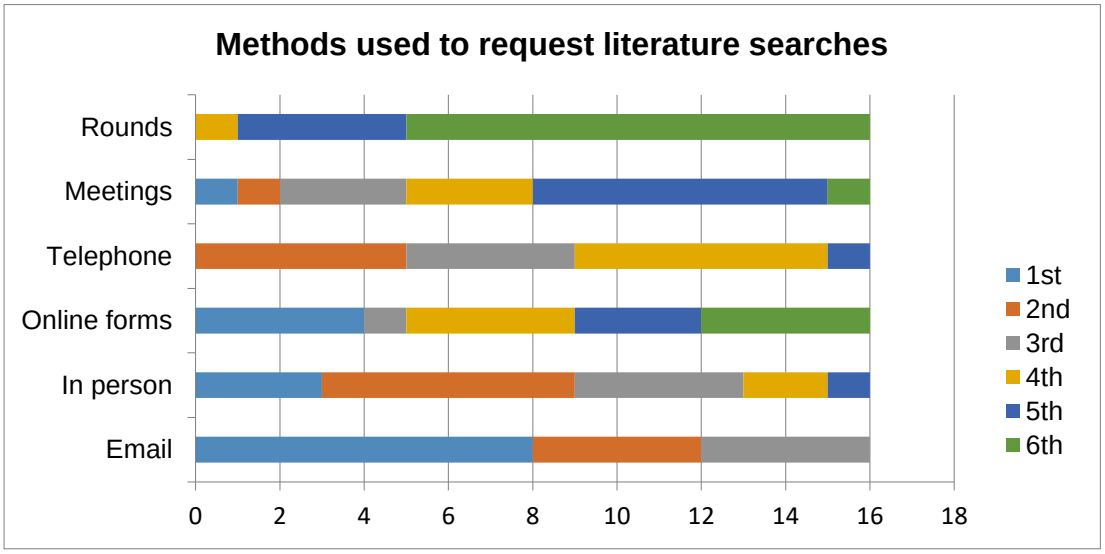
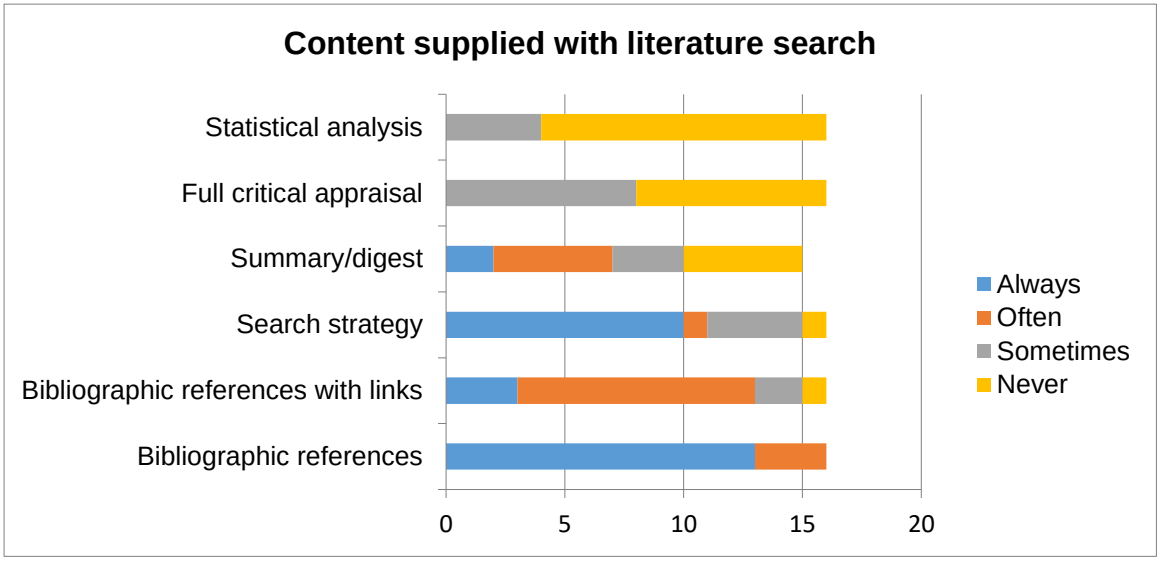


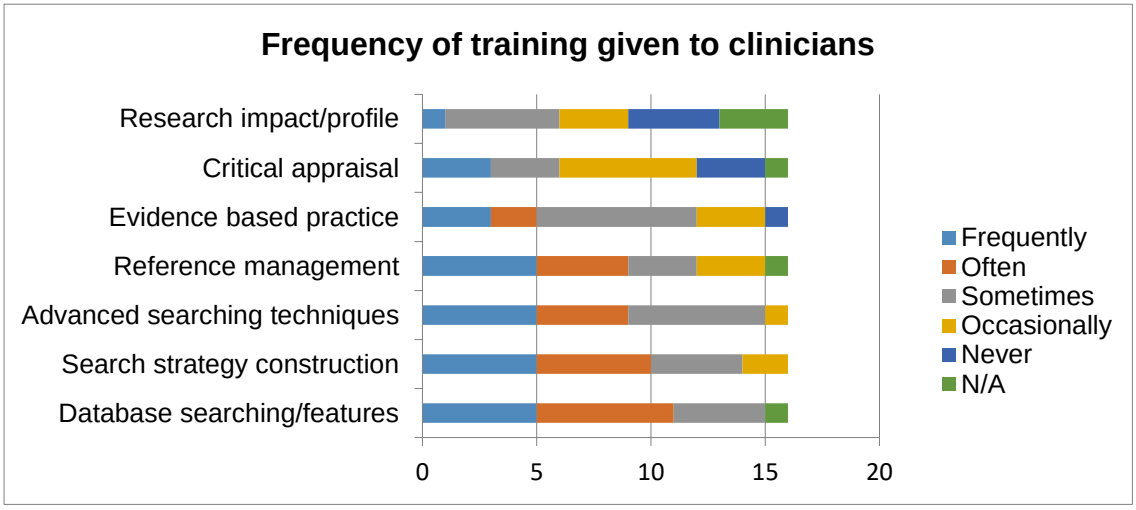
Figure 7. Content supplied from literature searches (n=16)



4.4 Educator

Database searching, search strategy construction, advanced searching and reference management are all taught *frequently* for 31% (n=5) of responses (Figure 8). Training (that is providing training in searching/information skills) was an *essential* activity for 67% (n=12) of respondents when ranking in terms of importance.

Figure 8. Frequency of training given (n=16)



4.5 Soft skills

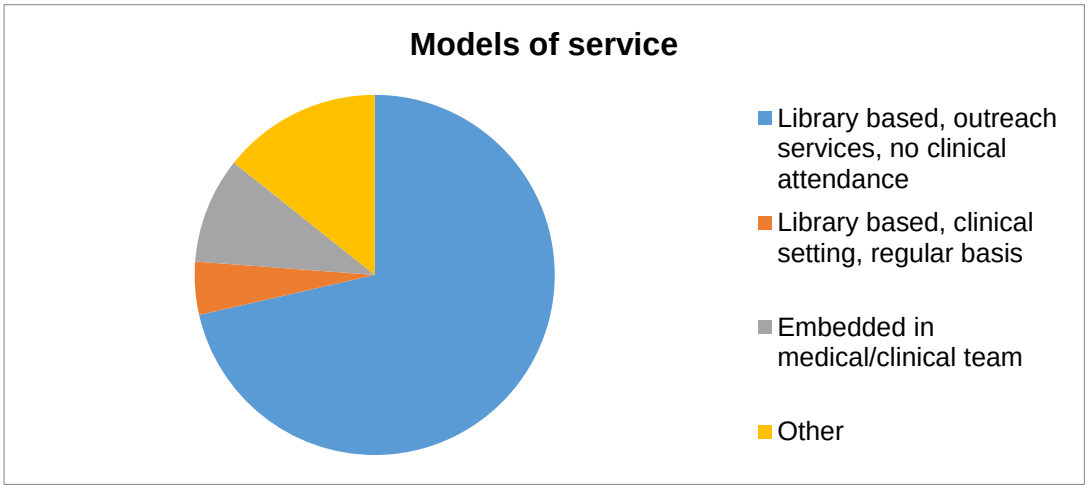
Responses to the survey question on the importance of certain skills/knowledge resulted in communication being rated as *essential* by 100% of respondents (n=18). Communication, thinking style and interpersonal skills were included in responses to the question asking for 3 principle skills/knowledge essential in their position.

Responses (n=15) to the question on personal attributes that are useful in the clinical librarian role resulted in a list of suggestions such as approachability, good communication skills, lateral thinking, salesmanship, flexibility, facilitative, friendly, good listener, application, energy, diligence, consultative, outgoing, people skills, team work, service delivery, quick thinking, encouraging, relationship skills, thoroughness, willingness to help, willingness to explore new ways, networking, negotiation, wisdom, judgement, directness and honesty.

4.6 Model of service

The model of service chosen by the majority of respondents, 71% (n=15), was "*in a library providing outreach services (literature searching, information skills training) without clinical attendance*" (Figure 9). There were two respondents who chose "*working entirely as a member of a medical/clinical team (i.e. embedded)"*; one respondent who chose "*in a library and work in a clinical setting on a regular basis*" and one respondent expressed the model as "*blend of 1 and 2*" (this being library outreach without clinical attendance and library outreach with work in a clinical setting).

Figure 9. Models of clinical librarian service (n=21)



4.6.1 Model: In a library providing outreach services without clinical attendance

Fifteen participants identified their role as being library-based outreach without clinical attendance. These participants worked in public hospitals (n=11), health department (n=1), public/private hospital partnership (n=1) or specialist health service (n=2). Most reported to a library manager/supervisor (n=7) or clinical manager/supervisor (n=5). The staff establishments were 2-3 staff (n=7), 4-6 staff (4), one staff (n=3) and 7 or more staff (n=1). All but two participants indicated they never attended clinical activities or it was not applicable. However, one respondent nominated fortnightly attendance at both clinical meetings and journal clubs and another respondent attended clinical meetings on a monthly basis.

4.6.2 Model: In a library and work in a clinical setting on a regular basis

One respondent identified their role as library-based with regular clinical attendance. The role is part of a 2-3 staff establishment, in a public hospital and reporting to a clinical manager. This respondent attends clinical/departmental meetings, grand

rounds and journal club monthly, and case conferences and ward rounds weekly. The time spent in the clinical setting was averaged at 3-4 hours per week.

4.6.3 Model: Working entirely as a member of a medical/clinical team

Two respondents identified working embedded in a clinical or medical team as the best fit for their role. One reported to a library manager and is based in a public teaching hospital. The other reported to a non-library service manager (it is not possibly to determine whether the manager's position is in a clinical or managerial stream) and works in a state-funded service situated within a public hospital. Both work in staff establishments of 4-6 people. One attends clinical/departmental meetings and case conferences on a fortnightly basis, and journal club monthly. The other respondent attends clinical/departmental meetings on a monthly basis. However, both respondents' later answers the question on average time spent in the clinical setting per week as being "*none*" and one indicates the speciality they support is "*All departments - staff library"*.

4.6.4 Model: Other

Three respondents did not choose a model from those offered in the survey and provided explanation under "other". One described their situation as "*In a formative research team. Providing outreaches services including lit searching, info skills training, doc delivery*". This respondent reports to a research manager and is part of a 4-6 staff member unit. The team is federally funded but it is unknown if it is hospital based. Journal clubs are attended monthly. Average weekly attendance in the clinical setting was given as nil.

Another respondent described their model as being "*a blend of 1 and 2*". This respondent works in a public hospital with a team of 2-3 staff members. On average an hour a week is spent in the clinical setting attending clinical/departmental meetings monthly, grand rounds fortnightly and journal clubs weekly.

Lastly one respondent described their model as "*Consultant to library staff and hospital staff as they request*". The setting is a public teaching hospital with a team of 4-6 staff members. Less than one hour on average is spent in the clinical setting with attendance at the clinical options given as not appropriate, however this respondent noted "*Research meetings of one kind or another*" under the option other for this question.

4.7 Roles

The survey asked participants the open-ended question, "*What is the primary objective of your role?*" and all participants gave a response (n=21). The responses could be grouped in the following themes –

- management (24%), this group had responsibility for managing a library;
- activity-based (48%), this group saw their role in terms of what they did;
- mission (14%), this group expressed their role in terms of their organisation's strategic goals, and
- policy/research (14%), this group referred to policy and procedures, guidelines or research.

Although expressed in various ways dissemination of information was a common theme for many respondents in the activity-based group. Responses listed literature searching, document delivery and interlibrary loans, reference/research and sending tables of contents. The other activity that rated frequently was training or teaching information literacy and searching skills. Some also referred to maintaining websites, online portals and e-resources. The two participants identifying as clinical librarians in their job titles described their primary objectives as "*literature searching, e-resource and searching training, ensure e-resources and access to them work, create and maintain Library Intranet/Internet sites, liaise with vendors*" (Clinical Services Librarian) and "[inter library loans]*, teaching students and staff on EndNote software, circulation*" (Clinical Librarian).

There was little explicit mention of clinicians in these responses. The exceptions to this were from the mission grouping. One participant stated "*Linking practising physicians (i.e. all doctors) with relevant information to safe* [sic] *lives as swiftly as possible*" and another wrote "*to support clinical staff in providing evidence based clinical care and to support management staff in providing evidence based management systems*". The third statement in mission was "*To provide the organisation with the information required for our research and to support the fact that we are an evidence-based organisation"*. The absence of a direct reference to clinicians is not necessarily significant as many of the participants are library-based without clinical attendance and would likely see their role as supporting all staff not only clinicians. Also many responses were more task or activity oriented.

The management theme included brief descriptions from respondents such as library management, responsibility for all library services and establishing a library service. The respondents in this grouping were a mix of positions and included library managers (n=2), librarians (n=2) and Librarian- training & education (n=1). The policy/research grouping was a loose association of those responses that did not fit the other categories, and the objectives included research, policy and guideline support.

4.7.1 Job title: Clinical librarian

Only two participants in the survey had titles incorporating the word clinical – one was Clinical Services Librarian and the other Clinical Librarian. The positions share similarities of being in public teaching hospital settings, working from within a library to provide outreach, are from larger staff establishments within the libraries (4 to 6 staff and 7 plus staff respectively), reporting to library managers and having been established in the last two years. The model of service delivery chosen by both these participants was "in a library providing outreach services (literature searching, information skills training) without clinical attendance".

The primary objectives for these two participants were “Clinical Reference and Policy Guideline support” (Clinical Librarian) and “Outreach leading to embedded role” (Clinical Services Librarian). They both nominated literature searching and information training as essential activities, and communication and retrieval strategies as essential skills. However, for the Clinical Librarian other essential skills or activities were alert services and e-literacy whilst for the Clinical Services Librarian it was relationship management and understanding the clinical and research environment.

In the free text response to listing the “3 principle skills/knowledge you consider are essential in your position” they gave different responses. The Clinical Services Librarian listed

1. interpersonal skills;
2. advanced knowledge of database structure; and
3. advanced knowledge of evidence-based practice principles.

The Clinical Librarian listed

1. time management and organising skills;
2. logical and critical thinking; and
3. communication.

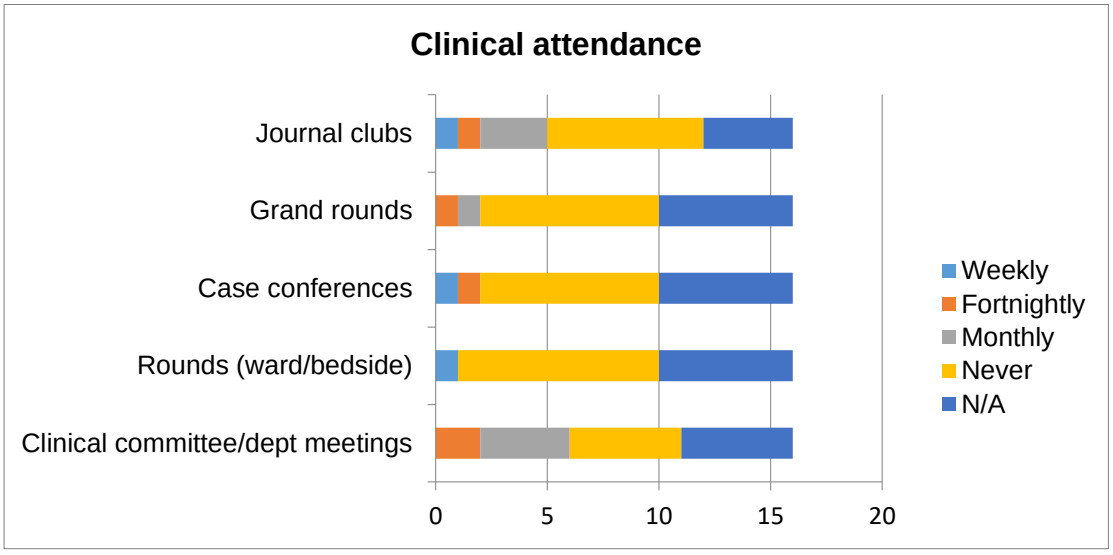
The differences would appear to reflect the primary objectives of each position. Both the Clinical Services Librarian and the Clinical Librarian exited from the survey at Q12, which asked about critical appraisal activities.

4.8 Clinical outreach

In response to the question on time spent in the clinical area, there were no respondents who attended a clinical activity on a daily basis (n=16) (Figure 10). One respondent attended rounds (bedside/ward), case conferences and journal clubs on a weekly basis. There were four responses for attending clinical committee/departmental meetings monthly, and two responses for attending them on a fortnightly basis. There were three responses for attending journal clubs on a monthly basis.

The average amount of time per week in the clinical setting resulted in 10 responses indicating no time, and 3 responses for an hour or less. There was one response averaging attendance at 3 to 4 hours, one response for 7 hours, and one response estimating 20% of time.

Figure 10. Modes of clinical attendance (n=16)



The departments or specialities supported by the participants includes mental health, psychiatry, social work, occupational therapy, perinatal and infant health, oncology, surgery, pathology, orthopaedics, haematology, neurology, anaesthetics, cardiology, and critical care. Five respondents said they support “all” and four respondents also

specified “nurses”. There were three responses to the question asking which other professionals were on the patient care teams attended by participants. Teams members included consultants/registrars (2), allied health (2), residents/interns (1), nurses (1), students (1) and management (1).

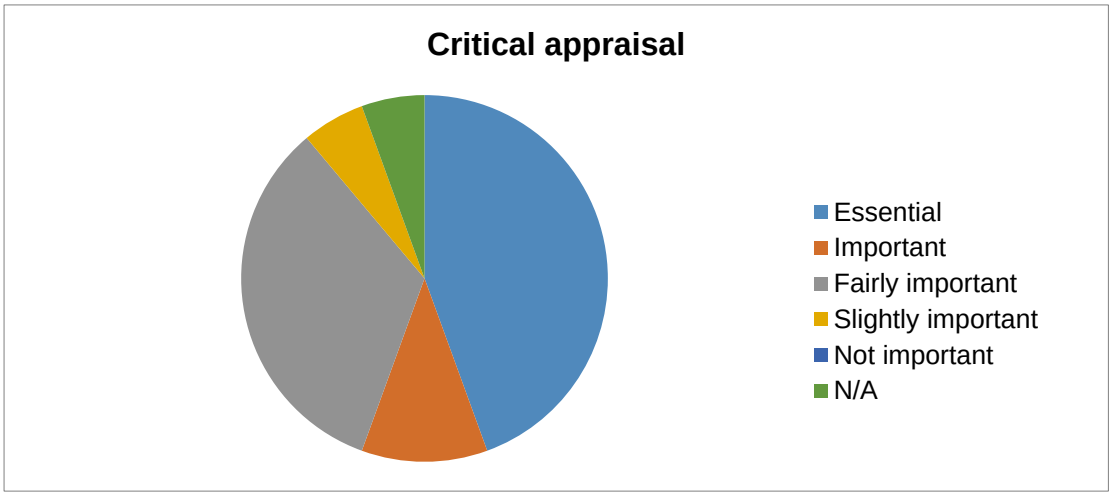
The question asking for a ranking of the 3 most important skills or knowledge for respondents’ position showed that professional knowledge was perceived as being highly valuable. The phrases “*knowledge of”* or “*advanced knowledge of”* or “*understanding of”* were prevalent in the answers. The content of this knowledge encompassed the health care environment in general and the specific organisation they worked for, appropriate literature and resources, the principles of information organisation, and the resources themselves - especially the databases. In the case of the databases it was not only how to use them but how they are designed and structured.

4.9 Critical appraisal

In the survey, participants were asked to rank activities in terms of importance and critical appraisal was one of the activities. There were 18 participants who responded to this question, and critical appraisal was rated as *essential* 8 times and *fairly important* 6 times (Figure 11). Although there was one rating for *not applicable*, there were no ratings for it as *not important*.

There was also a specific question in the survey on critical appraisal, which was “*If critical appraisal is part of your role, please describe what this entails*”. This was an open-ended question and there were 9 responses. Four of the 9 responders had rated this activity as essential.

Figure 11. Critical appraisal as activity (n=18)



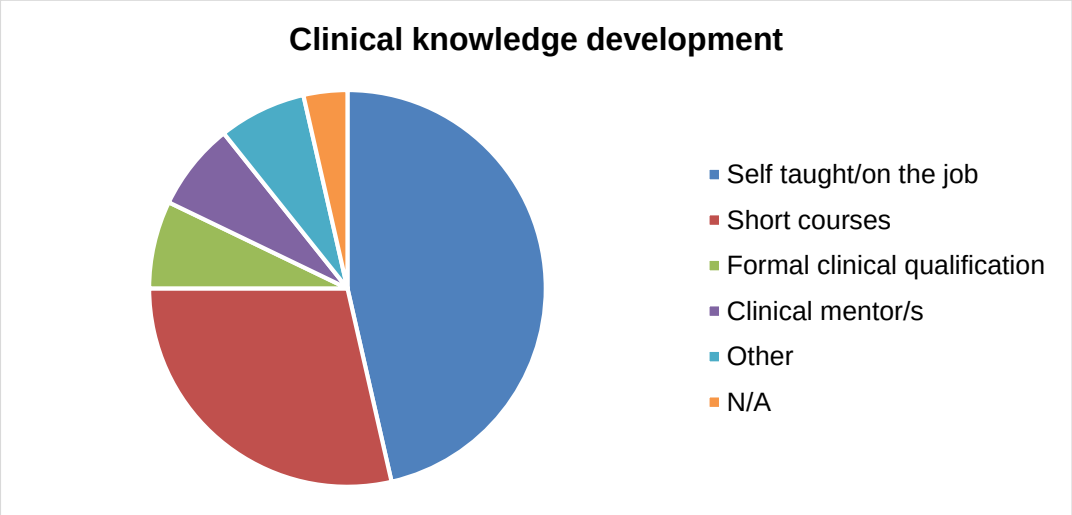
The responses were varied, and some were ambiguous as to whether the description was about what they actually do or was about the respondent's theoretical understanding of critical appraisal. Two responses read as carrying out active critical appraisal - one response stated "*helping with screening large sets of retrieved references to reduce them to items for actual appraisal*", and the other stated, "*identifying highly relevant and specific content for clinical staff*". Two responses indicated a training role in critical appraisal by "*guiding and instructing clients on what makes a reputable and authoritative reference*" and "*comparing the state of the literature and the state of staff understanding*". Possibly a third response could be categorised as a training one in that "*journal club discussion*" can be an educational opportunity.

There were two responses that were unclear as to how the "*appraisal of the literature*" and the "*making judgements on what is relevant/authoritative/valued in information provision*" were practiced in the roles. Finally there were two responses that indicated they did not undertake critical appraisal, and of these one respondent wanted to undertake a course on it, and the other noted the how critical appraisal plays a role in effective literature searching. Interestingly one of these two negative responses had rated the activity as essential.

4.10 Clinical knowledge

This section of the survey included a question seeking to know if participants had a prior clinical background, and two respondents out of 14 answered *yes*. The next question asking how participants acquired clinical background knowledge shows 81% are *self-taught/learnt on the job* and 50% had attended short courses. A mentor or clinical champion was available for 33% of participants (Figure 12).

Figure 12. Clinical knowledge (n=14)



4.11 Clinical means?

The survey included the question "*What does the term "clinical" mean to you when it is included in a position title for a librarian or informationist*". There were 14 responses that could be divided into 2 categories, although the distinction is a fine one, and altogether the responses show an agreement on patient care and clinicians as the important elements. There were 5 responses that gave emphasis to patient care as the focus such as "*Involvement in the patient-care process*". There were 6 responses that described a clinician/clinical team focus, such as "*Working within a clinical setting, with other clinicians*". There were 3 responses that did not fit either

category, and they were “health based”, “medical” and “assisting in systematic reviews”.

4.1.15 Service evaluation

Routine measurement of performance and effectiveness of their roles was undertaken by 6 of 14 respondents to this question in the survey. One response was “*We're librarians so we measure outputs (e.g. #of lit searches / month) not outcomes*”. Other responses indicate use of key performance indicators, statistics on usage/queries, testimonials, feedback and surveys.

4.12 Future goals

The survey asked “Briefly what would be the main goals you would like to achieve in your role over the next 3 years?”. There were 13 participants who answered this question, which gave the option of listing the participants’ goals from 1-5. One response noted it was not applicable for them, and the responses of the other 12 were categorised as follows:

- Outreach*: e.g. Build a better more integrated relationship with clinical staff*; *Embed myself into journal clubs/ clinical heads meetings*; *Get champions in other departments*
- Skills: e.g. *Learn how to do a systematic review; Acquire more knowledge on critical appraisal; Find a mentor to fill knowledge gaps; Conference paper presentation*
- Service delivery: e.g. *Convert all resources to an e-format; be innovative in services supplied; Continue providing up to date information to clinical staff; improve the doc delivery system*
- Promotion: e.g. *Increase library visibility; Establish a good marketing strategy to broaden the client base; meet every health worker in the region*

- Education: e.g. *Do more frequent drop in sessions; Increase the teaching of Referencing; Improve the searching ability of every staff member*
- Research: e.g. *Provide hedges and filters to ensure a consistency of searching; Be acknowledged for assisting in published reviews; Develop support resources for scholarly researchers/learners*
- Professional: e.g. *Established 3 day per week job; Extension of role hours; Full time role; Continued professional development and professional association participation*

Overall service delivery had the largest number of responses (n=10) across the lists followed by skills (n=8). In terms of being listed as the first goal to be achieved, outreach had 3 mentions, followed by service delivery and professional with 2 inclusions each.

4.12.1 Final comments

The last question in the survey was open ended and allowed any further comment on their role or the role of the clinical librarian. There were 8 responses and they touched on different aspects. Two responses noted it was rewarding and vital to patients and staff. Another two responses noted that in one case the role was not fully developed, and for the other it is a role that is often in isolation without benchmarks for the knowledge-base. One response expressed the opinion the position would benefit from national recognition such as a registration board. And one response was

> *I think the role of clinical librarian is where most hospital librarians aspire to but I am not sure the Australian experience can be obtained like the UK or USA library literature talks about*.

4.13 Chapter summary

The results of the survey show most of the participants were based in hospital libraries providing outreach library services to clinicians. Only two respondents had the wording clinical librarian in their position title. Literature searching, information retrieval and training in information skills were common activities. Attendance at journal clubs, department meetings and grand rounds were more usual than ward rounds as venues for interaction in the clinical work environment.

The next chapter will report on the findings of the second phase of the study which was a qualitative investigation using semi-structured interviews.

5 RESULTS OF PHASE 2: INTERVIEWS

5.1 Introduction

The previous chapter reported on the first phase of the research, which was an online survey. This chapter reports on the findings from the semi-structured interviews that were conducted as the second phase of the research. Interviews were used to gather qualitative data on the role of clinical librarians. As has been discussed in Chapter 3 mixed methods research uses both quantitative and qualitative approaches to investigate research questions (Creswell & Clarke 2007). The aim of the qualitative phase was to better understand the ways in which the complexities of knowledge, skills and activities of the clinical librarian role are experienced in the Australian setting.

The sections in this chapter are organised by the themes that were identified from the literature review, and used in the Chapter 3 to report on the survey findings. The themes include roles, skills and knowledge, clinical outreach, information dissemination, education and training, soft skills, service promotion and future influences.

5.1.1 Participants

The three interview participants were located in Victoria (n=2) and Queensland (n=1). Two are librarians and one is a library manager. All three are employed in hospitals, with two interviewees being situated in metropolitan services and one interviewee being situated in a regional service. To preserve anonymity the interview participants have been allocated an identification code composed of two letters (e.g. PA).

5.2 Role

All three interviewees had different emphases when explaining the role, but it is clear the shared element is their client group – the clinicians. One aspect of the role is the activities undertaken which are "*diverse… part traditional -database searching, information resource training- with additional activities such as attending journal clubs and clinical meetings*" (PB). The role also has a supportive element in patient care by "*helping clinicians research data in an efficient manner so they can make better informed decisions*" (PA). And the role is a "*model where the librarian pushes themselves outside the walls of the library and actually does get involved with the work of the client group*" (PC). This participant went on "*it is the role of a reference librarian but with a very clear client focus - the client group being the clinicians*" (PC).

The role lends itself to being "*very much a boutique service*" (PA) that results from the rapport and knowledge acquired by the librarian about the department, its culture and habits, so that it is tailored to meet specific clinical needs. And one interviewee further saw the role as fulfilling "*the business needs of an organisation and a dynamic library can do that in lots of different ways*" (PC).

5.3 Skills and knowledge

Two interviewees noted the requirement for advanced information skills, and it was, for one participant, a position "*very clearly marked at the specialist position, not just your basic entry level*" (PC). There is the need for "*advanced searching knowledge for systematic review searching*" (PB) and, being able to perform at "*an advanced level definitely, the kind of expert searching skills, the critical appraisal skills and knowledge of the particular resources related to a clinical area*" (PC).

The view of one participant was the clinical librarian brings a unique skill set to the clinical setting. This skill set is a "*different sort of skill set and different perspective*" (PC) to that of the clinicians and other health information professionals, and relates

to information management, as "*not everybody knows how to manage information and manage it well"* (PC). Aspects such copyright and publishing - "*you know, what does open access mean, and where do I get published … how do I raise my profile, that sort of knowledge base" (PC)* – were among the kinds of skills that librarians possess; as well as being able to conduct "*the comprehensive searching"* on bibliographic databases for research *"as well as the answers to clinical queries"* (PC).

There was some difference of opinion on the value of clinical knowledge among the interviewees. It was regarded as having "*been very important*" (PA) for one participant, while for another "c*linical knowledge is not that important"* (PB). However both agreed that *"What is important is that I recognise when I have to have something explained in order to then look for information*" (PB), and "*we're not afraid to ask and say hang on I don't understand what you're talking about"* (PA). However one interviewee was of the view "*I think if you do have some kind of advance or qualification at all in a health related area I think that's good. So there's an appreciation then of the whole of the area of health and you know in an academic way*" (PC). And further it is important to have "*an appreciation of the subject areas that they're going to be covering and understanding, of course, of medical terminology. But yeah, a respect for the clinical way of viewing the world, an understanding of that*" (PC).

The interviews did not reveal a clear picture on critical appraisal as a skill. One interviewee had started providing "*evidence summaries for departments - have only two so far - on commonly occurring questions*" (PB) but did not undertake any critical appraisal of the evidence for literature searches. Another interviewee said, "*right this is the question we had from Monday, this is what we found and here's the one-page summary"* (PA) and that working with registrars "*we would try and look at the level of evidence*" (PA). The summary that resulted was a joint effort between the librarian and the clinician. In discussing the information supplied in response to requests it is the "*critical appraisal skill that can say this is good quality evidence or this is the level of the evidence on the topic"* (PC), and in terms of research one interviewee

commented, "*my research knowledge is basic, but I know the study types and what studies best answer questions"* (PB). When asked about the importance of statistical skills one interviewee responded "*I'm not great with statistics but neither are the clinicians – any sort of mention of mathematical equations makes them go ugh*" (PB) and another commented "*So if the evidence is strong or not, if it's been statistically significant or clinically significant in our particular circumstance I would expect an understanding of that*" (PC). This interviewee also qualified this discussion saying "*It's never our role to give advice but it is our role to present the evidence for the decisions to be made"* (PC).

Only one interviewee mentioned working on systematic reviews, commenting this type of research seems "*to be de rigueur at the moment"* (PB). It is an activity that this interviewee is increasingly involved in, as "*quite a few people have approached me to write search strategies for systematic reviews"* (PB).

5.4 Clinical outreach

The range of activities the interviewees were engaged in attending were: ward rounds, journal clubs, case review meetings, shift handovers, grand rounds, audits, clinical procedures or research committees. This list represents the range of outreach interactions and the participants did not necessarily undertake them all. Clinical outreach is seen as a way of promoting information services to the clinicians "*I stay on this* [ward round] *even though I don't get questions as often now because it's a way to advertise my services"* (PB). Working alongside clinicians was for PA an opportunity to learn other technologies and sources of information.

The clinicians the interviewees worked with were not discussed in any depth but there were references to consultants, residents, registrars, junior doctors, clinical researchers, medical students, nurses and allied health. One interviewee included "*the executive and people in other non-clinical*" (PB) departments, and two participants referenced allied health specifically "*there may be dietician or allied*

health professional there" (PA) and "*the latest are pharmacy students"* (PB) attending rounds.

5.4.1 Ward rounds

All three do or have attended ward rounds. In one case the opportunity to join rounds came from a chance conversation "*I became friendly with one of the consultants and she came to the reference desk one day. She asked me as a matter of interest what clinical librarians do and I mentioned that some go on ward rounds"* (PB). Going on ward rounds appeared to be done a few times a week rather than everyday *"I would attend the ward rounds Mondays, Wednesdays, Fridays"* (PA) and *"I go once a week on alternate Tuesdays and Wednesdays"* (PB).

Ward rounds as an outreach activity was viewed with some caution. One opinion was "*in terms of physical presence on the wards and that sort of thing I think it's useful but it has to be in a meaningful way and meaningful is measured by the customer*" (PA), while for another the area of concern is "*whether it was actually useful or not*" (PB) to attend rounds. A further comment made was *"I did go on ward rounds but I'm not sure that's the way that things these things are developing now"* (PC). This interviewee saw education as possibly being a more significant interaction with clinicians, especially the junior doctors, such as "*showing clinicians how to get UptoDate* [clinician decision support resource] *anywhere on their phone and showing them where the patient information is. So…a clinical librarian now is more likely to be going out and making sure they know how to do that*" (PC).

Questions were given to the librarians who went on the rounds "*I did get some questions and the consultant encouraged people to ask me when they arise"* (PB), and "*At the end of ward round we would frame a question and I would go away and give them an answer within an hour*" (PA). However for one interviewee a change in the structure of rounds has meant, "*I don't get as many questions as I did now as*

rounds were reconfigured to be a fast summation of a patient's current situation. It is quicker but there is less time for education" (PB).

There was one reference to an affective dimension in attending ward rounds, "*It can be confronting. There is the antiseptic smells, noises, and you are seeing people who are very vulnerable. If a patient looks at me, I will smile. Sometimes it can be distressing"* (PB). Other aspects on rounds could be, "*quite challenging at times*" (PA), a remark made in the context of the librarian being introduced to the patient by the consultant as, "*the librarian at the end, and people would look…*[PA is] *going to find out for us what we need to know"* (PA), in addition "*this is being done at the bedside, so it's a bit squashy at times"* (PA). The provision of information within a deadline was acknowledged in one instance as being "*very labour intensive*" (PA).

The nature of relationships with the clinicians on rounds were not really described but there were comments such as "*amongst the general physicians a couple of them sort of looked down their nose at you…but a couple of others thought no that's a great idea*" (PA) and "*the consultants on these ones don't introduce me so I have to do it myself … so the interns know who I am and why I am there. The other staff know me now*" (PB). The experience is "*very dependent on having a...responsive or enthusiastic consultant*" (PA).

5.4.2 Journal clubs and clinical meetings

Two of the interviewees attended journal clubs. One participant was "*invited to attend two and another one I attend was one my predecessor went to"* (PB) and frequency of attendance was monthly. Attending journal club was an opportunity to *"see clinicians"* and *"I join in the discussion and ask questions if I don't understand something - and other meetings like audits and other educational meetings such as grand rounds. I usually just listen at these and will make comments to others at times."* (PB). Journal clubs also occasionally led to information requests.

Interviewees attended clinical meetings such as case review, research committees or clinical guidelines, for example "*over last couple of years…we attend the…research management committee…held monthly, we not on the HREC or anything like that"* (PA), and "*going to meetings that I think I could contribute something useful"* (PB).

5.5 Information needs and dissemination

The clinician comes to the librarian because "*they want information, that is the general thing"* (PB) although other needs are for referencing, creating posters, study or talks. There were also those "*wanting to know how to search a database or wanting me to do a search for them and coming to see me to describe what they are after"* (PB). The interaction between librarian and clinician around information seeking involved firstly identifying "*what they want to know, where they've looked, what resources they have access to and then establish all those you know fundamental parameters*" (PA) such as the end point, timelines, formats, familiarity with reference management software and type of computer.

In terms of supply "*with reference questions I try to get answers as close to the question as possible. If that means looking through 60 abstracts I will*" (PB) but "*I don't want to give people all the results of a search, especially if there are many. If there are a few I let them sort it out themselves"* (PB). For another interviewee "*the formats we provide information in will be dependent on the type of query*" and "*we will supply full text sometimes, we will take the initiative and provide them with the full text of something, it may be a series of references...and citations*" (PA). In the experience of one interviewee the clinicians wanted assistance with topics that were not routine "*so you usually find it's something quite exotic, a particular syndrome or a reaction or something like that, which makes it pretty easy to get information that's meaningful for people"* (PA).

Information supplied in response to a request might be shared among other clinicians. A synopsis that was produced to meet a request was sometimes "*disseminated wider than just coronary care, so some of those topics ended up being presented in medical grand rounds or medical journal club"* (PA) and "*usually what they're looking for* [is] *something they can share … typically it's not just the one person*" (PA).

The word reactive occurred several times in one of the interviews. Through involvement in activities such as journal club or case review meetings which is "*being proactive we'll often get a reactive question*" (PA). In this interviewee's experience a "t*ypical interaction is reactive*" (PA) and "*often not in a timely fashion*" (PA), that is, the follow through for information happens not at the point of need but later when the clinician has more time. In case review meetings "*It's very unusual for them to want something there and then*" (PA) because in this forum it is about analysing what happened and "*you can be referred to as resource to help them put it all in context, and you know, improve what they're doing*" (PA). In another interview the word repeat occurred several times such as "*repeat business*" (PB) or "*repeat service*" (PB) suggesting that once a clinician used the librarian's expertise they were likely to do so again.

5.6 Education and training

Education and training appears to sit as an associated activity such as within ward rounds or journal clubs. One interviewee described taking part in "*a weekly thing on one of the medical units at shift handover…*[involving] *whoever is there at the time and there's a quick case presentation, so it's aimed at nursing staff*" and is typically "*five minutes about information around the topic*" (PA), along with the other healthcare professionals. Another interviewee however commented, "*when I started, there was time for education but since the introduction of rapid rounding, there is no time for that anymore"* (PB).

An interest by clinicians in improving their skills across a number of areas was noted by one interviewee who commented "*people are also interested in how they can use information products better – Google, various databases…and how to write literature reviews*" (PB). Another interviewee noted *"I'm starting to develop closer ties now with clinical education and training which a large part of that is around nursing"* (PC).

Training activity was characterised in one interview as, "*when there's some sort of teaching activity coming up that's when they'll contact us and go, oh by the way, what can you find for me on xyz*" (PA). This interviewee also shared that "*my role is often doing after sales service for the universities so they graduate all these information literate clinicians who have got no idea how to use basic tools …. so I do a lot of reactive one on one education and training particularly when people come back to study or when they enrol in higher degree*" (PA).

5.7 Soft skills

In many ways the librarian builds *"up a rapport and you build up a knowledge of how they operate and the culture of that department*" (PA) and "*on the practical level it's about having that relationship*" (PA) between the librarian and the clinician. Building the relationship in the view of this interviewee was based on "*you deliver* [laughs] *essentially you do! As silly as that but you also have a profile as well*" (PA).

The idea of the clinical librarian as a collaborator was referred to by two of the interviewees. They thought "*if you can be seen as almost a collaborator or at least as a friendly face*" (PA) and have the "*ability to work with others – be collaborative*" (PB) was beneficial as it would enhance the interaction with the clinicians. Other qualities mentioned were "*a friendly demeanour, willingness to be flexible with hours, ability to convey information and knowledge during face-to-face education sessions*" (PB) as well as "*be receptive as I said before to learn two ways"* (PA). It was important to have "*a respect for the clinical way of viewing the world, an understanding of that*"

(PC), and additionally the "*ability to work in multidisciplinary teams, and the desire to do that or the willingness to do that, and to participate in the working groups*" (PC).

Two interviewees worked in smaller hospitals and both saw that the size of the institution and the relative stability of their workforce assisted in being familiar with clinical colleagues and building relationships and organisational knowledge, for example, "*we get junior doctors staying on for three or four years*" (PA) and "*you actually know your clients from when they were first off clinicians*" (PC). The other interviewee worked in a large tertiary hospital and it seemed the clinical domain more opaque "*I would like to know more about what meetings…are going on so I can attend them and see if I can offer services that might be of use. If only I could find out!"* (PB). However, there was a view expressed that some departments just are hard to connect with as "*it's very difficult to meet them in a timely fashion, I'm thinking surgery…*[or]*…orthopaedics who have quite discreet needs*" (PA).

5.8 Promotion and evaluation

One interviewee observed, "*It's extremely difficult to prove or show any sort of causal effect"* (PA) of the impact of information supplied to the clinicians. Although this interviewee did have an instance in which the outcome of information about a therapy measure "*had a direct impact on clinical care that created quite, what'll I say, quite a reaction amongst the medical department* ", and "*and that really sort of got us seen and acknowledged and accepted*" (PA).

One interviewee described "*we keep a spread sheet where we keep track of all these sorts of searches and things"* and "*we do keep compliments we get from people*" (PA) but formal evaluation had not been undertaken for some time. In general, the feedback tends to focus on "*the services aspect of it*", so that "*they commonly talk about turn around time, being able to locate something they couldn't* [find], *teaching them a new skill or teaching them about something they didn't know*

previously". So the comments are *"in terms of using information, not clinical knowledge"* (PA).

An evaluative criterion of usefulness in regard to attending ward rounds and meetings was raised in one interview *"I think I could contribute something useful"* or "*If I don't think I am getting useful results*" or "*What I wondered was whether it was actually useful*" (PB). Another interviewee also used the word useful as a measure and qualified it by saying it also had to be meaningful for the other members of the team.

If clinicians continued to seek the assistance of the librarians this was interpreted as satisfaction with the service "*If I do a good job, people may refer others to me or recommend the library. I guess I rely on good impressions being strong enough for repeat business and referrals"* (PB) and "*we often get a lot of repeat business"* (PA) and "*literature searching for people has repeat service*" (PB). One interviewee commented, "*As to how they relate to me, I don't know what they think of me but generally they seem pleased"* (PB)

In terms of promotion, comment was made "*I don't have any strategies apart from going to meetings that I think I could contribute something useful"* (PB) and *"we actually coordinate grand rounds for the hospital… part of that is a promotion thing and keeping yourself seen as being relevant and contributing"* (PA).

5.9 Future influences

The interviewees offered divergent ideas around future influences on their roles. Systematic reviews were identified as a significant factor in one interview, "*One thing I think will impact the most is the growth in systematic reviewing and requests for my expertise"* (PB). For this interviewee the other factor was to continue to development of organisational knowledge "*I am also learning about how this organisation works*

and how to mould services using this knowledge. I expect that this will continue over the next five years" (PB).

The trend toward health consumers was a driver in another interview. Whether it would impact the clinical librarian was not clear to the participant but it definitely will impact health libraries, "*the focus on consumers and the partnering with consumers is the way the national standards talk about it and a big part of that is around health literacy… I think it's going to be much more face to face with consumer than what we have been in the past"* (PC).

For this same interviewee a second trend was "*getting more in touch with the other professions in addition to medical. The other health profession, so nursing and allied health, and through the education role or the education clinical education and training that happens through our hospital department here to those areas"* (PC).

Technology is allowing clinicians to create their own resources and this is an area of future change because "*that's going to need some sort of curatorship so we have a lot of things being done locally and I think this is probably a bit of quality thing*" (PA) because if it is not structured "*I can see a bit of a concern there for things going awry*" (PA). An additional area was "*working much more closely and strategically with self instruction…if we're not careful we can spend a lot of time showing people the same thing all the time*" (PA). This interviewee also saw the need for "*demonstrating your value and that's always been a perennial*" as well as "*being closer to where your high value clients are"* (PA).

5.10 Chapter summary

The interviews provide more detail about the ways in which clinical librarians experience their role. The results suggest the role is diverse and influenced by relationships, the organisation, technology and the needs of the clinicians.

The next chapter discusses and synthesises the results of the survey and interviews and draws on the literature to consider how the findings from the Australian context compares to the role as described in other studies and literature.

6 DISCUSSION

6.1 Introduction

This study aimed to examine the role and functions of the clinical librarian in the Australian setting. A mixed methods research design with a pragmatic approach was used to investigate the topic. In this chapter a synthesis of the findings will be presented in a discussion. The use of a pragmatic mixed methods study provided a means with which to investigate the topic using both quantitative and qualitative methods to provide a richer understanding.

6.2 Titles, names, definitions

The results suggest that the issues with role definition and role title found in other research are to be found here as well. Only two participants had positions with clinical librarian in the title, and another participant whose position is clearly one on the clinical librarian model did not have a title reflecting that. Other participants were library managers, librarians, or library officers. The participation by library managers was unexpected because it is not normally the case that a manager would also hold a specialised reference role with the level of workload and relationship intensity of a clinical librarian. So, too, library officers were unexpected respondents as the assumption is the clinical librarian would possess professional qualifications, which a library officer does not necessarily hold. Possibly the library managers were solo librarians who see their job as being across all the functions in a health library setting, or perhaps they are the only professionally qualified staff member in the library team, hence taking the outreach role. Or perhaps the job proper is library manager, but because the setting is clinical their perception is they are clinical librarians. The study by Ward (2005) also found 5 out the 26 respondents had job titles that suggested library management roles. Ward does not speculate on this, although it was also found that the majority of respondents in her study performed the clinical librarian role for 10 per cent or less of their time. The study by Tan and

Maggio (2013) also found that clinical duties were only a one part of participants' roles, which they concluded contributed to the title variations. The research undertaken here did not ask whether participants' jobs entailed being a dedicated clinical librarian or whether it was a duty within another role, and this might need to be clarified in any further research.

What is apparent from all the research is the lack of clarity and consensus as to what the role encompasses, and this makes it difficult to distinguish between roles in health libraries and to have requirements and standards for the clinical librarian position itself (Brettle et al., 2011; Sargeant & Harrison, 2004; Winning & Beverley, 2003). Career progression, remuneration and appropriate education are impacted as well. It also makes promoting the role to the organisation more problematic when the profession cannot be definitive as to the features and benefits (Harrison & Beraquet, 2010). The research undertaken here was not targeted at a predetermined group of clinical librarians and this may have resulted in collecting data from a more diverse group than other studies, and thus contributing further to the idea that the role lacks precise parameters.

Despite the ongoing tensions regarding the definition, there is a perception that it is different role or that it is intended to be different to other medical librarian roles; and this difference centres on the nature of the interactions and relationships with clinicians. Certainly it is regarded as a specialist role (Harrison & Sargeant, 2004), and this was echoed in the findings for this study. Responsiveness to the needs of the client group is highly valued as an important aspect of clinical librarianship and this is referred to frequently in discussions on the clinical librarian (Sargeant & Harrison, 2004; Winning & Beverley, 2003). What is unclear, however, is why being responsive to contextual needs is somehow regarded as mutually exclusive to determining standardisation on what the role is in terms of skills, knowledge and function.

One definition given by a participant in this study for the clinical librarian was the "role of a reference librarian but with a very clear client focus". Other definitions for

the role as identified by participants involved linking, supporting or providing physicians, clinicians, management staff and health organisations with relevant information or data in order to save lives, provide clinical care, make better informed decisions, and undertake research. There was a clear understanding that clinical in relation to clinical librarian or informationist meant involvement “in the delivery of healthcare direct to the patient”. The conception of the role as a support to clinicians to improve decision-making and patient care in this study aligns with other descriptions of role purpose in other studies. Most commonly descriptions refer to providing best available or quality assured information or clinical evidence, supporting decision-making, and the point of need (Brettle et al., 2011; Sargeant & Harrison, 2004).

6.3 Knowing and not knowing

A theme emerged from the data analysis on the significance of professional knowledge. This was a thread throughout the results and formed the basis of a belief in the value and expertise the clinical librarian brings to the provision of health care in Australia.

In analysing the interviews and the free text responses in the survey it became apparent that knowledge was a noteworthy factor for the participants. Professionals possess “special knowledge and skills in a widely recognised body of learning derived from research, education and training at a high level, and who are prepared to apply this knowledge and exercise these skills in the interest of others” (Australian Council of Professions, 2016). The participants in this research clearly saw their professional knowledge as a significant and defining feature within their context of service. This focus on knowledge was not apparent in the literature on clinical librarians – or at least not as explicitly. However, although Australian librarians were more conscious of their professional knowledge in this study, what they shared with international counterparts is their domain of knowledge. Databases and how to search them was a particularly important feature, not surprisingly as literature searching is so central to the role. Interestingly the participants articulated the need

to not only know the databases in a subject sense, but also how they are designed and structured. Overall the scope of professional knowledge identified was broad, and encompassed knowing the health and clinical literature, the health care environment, their individual organisations, scholarly processes, research environments and processes (including systematic reviews in particular), and the publishing industry.

There was an identification, too, that their expertise, and their skills, are "at an advanced level definitely, the kind of expert searching skills, the critical appraisal skills and knowledge of the particular resources related to a clinical area". One respondent to the survey commented about not applying for a clinical librarian position because "I don't feel I had the necessary skills to perform at that level". There was some hints in other research on perceptions of skill level, with one study noting in a small respondent group that only one had high level experience with medical databases while the rest rated themselves as average (Sargeant & Harrison, 2004). However, an ongoing issue is that of standards and benchmarking for literature searching so that practitioners can confidently claim levels of expertise, and one respondent to the survey in this study commented "It is a role that is often in isolation and it is difficult to benchmark your knowledge base". One study examining this question notes expert searching remains an art because of a resistance to "standardisation and scientific rigour" (Lasserre, 2012, p. 4). This lack of objective measure, Lesserre argues, casts doubt on the credibility of librarians. O'Conner and McDonald (2009, p. 1) go so far as to say "To assume expert searcher status is worthless rhetoric in the absence of any external qualifications or rigorous benchmarks to measure against".

Knowledge for the respondents was also about their clients. Those in hospitals that were small and/or had a stable career progression from medical student to registrar commented this helped build relationships, and thus knowledge about the culture of departments leading to the provision of "boutique service". The necessity of having organisational knowledge was a common finding with the research undertaken in the UK (Ward, 2005). One interview participant in this study commented on the difficulty

of establishing the best avenues for outreach when it was so hard to find information on meetings taking place in the hospital. The value placed on organisational awareness relates to the preoccupation with developing strong relationships and providing relevant, valued services to the client groups, and the knowledge that librarians must be strategic in order to ensure visibility (Lynn, Fitzsimmons, & Robinson, 2011). The issue of building relationships in clinical environments with a high turnover was a finding in other research, particularly with medical rather than nursing staff. This was regarded mostly as a challenge to continuity and promotion of service although a counterview that it increased the opportunity to reach more clinicians was also expressed (Harrison & Sargeant, 2004).

The flip side on knowing is “not knowing”. This is a weaker element but the participants did comment on improving their knowledge when necessary, usually about clinical matters, but also about related areas such evidence and research. Two of the interviewees commented they readily spoke up when they did not understand the topic under discussion either when they were with clinicians or being asked to undertake a search. The question of the necessity of clinical knowledge for librarians had a mixed response in this study, with a couple of participants indicating it was an advantage but another participant thought it was not necessary. In this study most of the participants have acquired their subject or clinical knowledge on the job.

A long ongoing and, as yet, unresolved discussion in the library profession is whether there is a requirement for formal subject knowledge to support different domains of client groups such as law, health or financial professionals (Lewis, 2009; Petrinic & Urquhart, 2007). Librarians generally acquire their subject expertise through a combination of experience and short courses once they take up a position with a domain specialisation. Sargeant and Harrison (2004, p. 179) report their study participants thought that learning whilst working was “inherent to the role” of clinical librarian. Participation by clinical librarians in clinical teams was valued for its educational potential as it facilitates greater understanding as to the requirements of, and conditions in which, health care is provided (Harrison & Beraquet, 2010; Tan & Maggio, 2013). There is a finding that experience can, in time, “level out” the

advantages of those who start with subject knowledge compared to those who do not (Petrinic & Urquhart, 2007, p. 173). However, a US study found that health sciences faculty rated subject background for librarians as either important or very important, and rated it above involvement with faculty through liaison (Cataldo, Tennant, Sherwill-Navarro, & Jesano, 2006) suggesting a different expectation by the client group as to appropriate subject expertise and qualification.

A comment by an interview participant that "It's never our role to give advice but it is our role to present the evidence for the decisions to be mad*e"* touches an area of unease or ambivalence for some librarians regarding critical appraisal in their roles. Certainly the results in this study were unclear about what critical appraisal meant to participants and how it was being performed. The need for precision in defining critical appraisal has become more pressing, as it is being used and interpreted in different ways as it continues to develop as a practice (Horsley et al., 2011). One description of critical appraisal skills includes having basic numeracy, an ability to search databases and the "ability to systematically ask questions of a research study" (Greenhalgh, Howick, & Maskrey, 2014, p. 4). Booth and Brice (2003) note the existence of a debate surrounding the extent of acquisition of critical appraisal skills by librarians; and Ward (2005) notes an uncertainty amongst clinical librarians on how fully they ought to appraise results, and concluded it was a key issue. Allied to this lack of confidence is an underlying lack of education and competency in numeracy – in particular statistics (Petrinic & Urquhart, 2007). A more interpretive role in filtering or interpreting information appears to be a hallmark of the informationist role, and none of the participants in this study identified themselves as being informationists. That said, participants did perceive the information they provided in response to a request would reflect "the state of knowledge on this particular topic …therefore…I've appraised the literature and this is the highest level of evidence that there is on this topic". So although they may not be appraising the content of the literature, or studies they have found, they are judging the level of evidence available on a topic.

One participant had a very strong belief librarians bring a unique knowledge base to the health care environment. This knowledge is information management and it is "unique in librarianship. I don't think that other health information professions necessarily have that knowledge". Lamb (Detlefsen, 2015) identified this expertise when she initiated the clinical medical librarian, and in particular she noted the ability to frame an answerable question as one of those information science skills. Librarians understand the facilitation required to work from discussion, to question and then to sources that may provide the answer. A librarian with good communication abilities brings this understanding to the clinical side of health services. If other clinical librarians elsewhere share this belief, as is likely, it was not made explicit in other studies. There was, however, universal agreement on the importance of communication skills amongst the respondents to the survey. Communication skills feature strongly as a necessity for the role across most studies as it is regarded as an essential skill in order to function effectively in a patient care team, in order to advocate for their expertise and services and interact with different health professionals (Winning & Beverley, 2003).

6.4 Relationships

The majority of participants in the study might be library-based but it is clear there is a focus on the clinicians, **"**clinical tells you the clients are clinicians**",** and so it is **"**very clear that the client group that you are dealing with is the doctors and nurses and allied health professionals in the hospital or in the health care". This is consistent with the clinical librarian role as described in the literature. However despite the underlying clinical focus for the participants, the study did not explore in depth the nature of clinical interactions nor acceptance (or otherwise) of the library services by their clinicians.

Relationships between clinicians and librarians take time to build. The interview participants all commented on needing to build rapport with, and knowledge of, their clients and that it takes time, as one participant noted *"*it has grown slowly, people are getting to know me and refer others to me*"*. Word of mouth was mentioned as

was delivering the service promised, being a collaborator and being friendly and open with the clinicians as ways to develop relationships. There were a couple of passing remarks that not all clinicians are welcoming of librarians in the clinical sphere, but equally there were indications of clinicians who were positive about it. Another factor identified in the literature is the need to be versatile as clinical librarian works in multi-professional teams in which other professions dominate (Feather, 2006).

This study is a little at odds with the literature when it comes to when clinicians ask for information. This might be because there appears to be less ward round attendance in this group of participants; however, even for those participants who do, the results suggest requests are not made at the moment questions arise. Most requests come via email or online forms and much less from meetings and rounds. One interviewee noted that the purpose of the rounds she attends had shifted away from education to rapid rounding, and the number of questions had dropped. Another interviewee remarked the clinicians come for information “often not in a timely fashion” as in they come to library when they have some time to undertake some research on the patient problem rather than immediately at the bedside. The conference presentations describing the services in Queensland, however, suggest that clinical questions did arise during rounds, although not necessarily on every round (Eriksson & Michener, 2009; Foxlee, 2003).

6.5 Outreach services

In the survey for this study participants were asked to nominate a model of service that was the best fit for their situation. The four options given in the survey were: library based and no clinical time, library based with clinical time, and entirely clinically based. To allow for different situations there was also a free text option of other. A majority of respondents identified their service delivery model as “in a library providing outreach services (literature searching, information skills training) without clinical attendance”. This model is closest in alignment with the Outreach description in the Brettle et al. (2011) study in which four models of service delivery

where identified in their systematic review of clinical librarian services. These models are: Question and Answer, Question & Answer plus Critical Appraisal, Outreach and Outreach plus Critical Appraisal. Their outreach model is characterised by the librarian utilising literature searches, attendance at ward rounds or journal clubs, and training to engage with their client group, possibly as part of clinical team.

Harrison and Beraquet (2010) devised a model for UK clinical librarians based on the skills and activities involved in the role. This model placed literature searching at the heart of model with use of technologies, critical appraisal, service promotion, attendance at rounds and clinical meetings, and finally, emotional intelligence and rapport. In terms of relating the Harrison and Beraquet (2010) model to the finding of this study there are some grey areas. Literature searching was certainly rated as an essential skill in the study. Respondents regard knowledge of, and highly developed expertise in, searching for literature as important. It would be fair to say it would be a central activity for clinical librarians in Australia given the findings from the study. Critical appraisal, as mentioned previously, is a difficult skill with which to be certain that it is being conducted on in the same way. Does it mean critically appraising the each article in terms of the study being reported or does it mean evaluating the levels of evidence? Either way, the findings in this study suggest that critical appraisal is not consistently done enough to be considered so prominently in regards to clinical librarian activity in Australia.

Service promotion is an activity participants mentioned however it was not a strong finding. Use of technologies is an assumed skill and is alluded to, but not directly addressed, in any great way in the results. This is not surprising as very little in librarianship is conducted without technology in some form or another. Librarians spend a great deal of time routinely assisting and educating library clients to use technology whether that be scanning, using word processing, the internet, reference software tools or sophisticated database products. Hence it can become an overlooked background skill. However, one interview participant did identify curation of clinician datasets and other clinician generated data (outside of patient systems) as an area of potential future impact for clinical librarians.

Harrison and Beraquet (2010, p. 129) believe attendance at ward rounds are "essential to gain initial entrée to clinical world" and clinical meetings are "essential for sustainability" of the clinical librarian service. The Australian experience is again hard to determine exactly, but it would seem that not all clinical librarians have involvement in meetings and ward rounds. There appear to be some contradictions in the survey findings on the responses to outreach and participation on clinical activities. As mentioned in the results, a few participants indicated both not attending clinical activities during an average week and yet also being involved in journal clubs or other activities with clinicians. Two participants who chose outreach with no clinical time as their model of service later indicated they attended clinical meetings and/or journal clubs. Do they perhaps see that only ward round attendance equates clinical attendance? For some this is the defining feature of the clinical librarian role, but for others any interaction with clinicians outside the library can come under the umbrella of clinical librarian. Certainly this study showed some involvement in meetings, case conferences, grand rounds, ward rounds and journal clubs by the participants. In other studies clinical librarians attended patient care rounds, journal clubs, committee or conference meetings or morning report (Tan & Maggio, 2013).

In another instance a participant chose the answer option "other" and described their service model as "In a formative research team; providing outreach services including lit searching, info skills training, doc delivery". This reads as meeting the criteria for an embedded position ("working entirely as a member of a medical/clinical team (i.e. embedded)*"* but as this option was offered but not chosen it is hard to know. Perhaps as the team is research rather than clinical/medical the respondent decided against choosing the embedded model? Another participant identified as "working entirely as a member of a medical/clinical team" but later responded as having "none" for average time spent in the clinical setting per week. Perhaps their work within a clinical team is not spent in the clinical space hence their response. However it is indicative of either the lack of clarity or lack of agreed definitions for the role and its associated activities.

The clinical librarian role in Australia was found to be functioning predominantly as an outreach service from a library. There were only two exceptions to this model and both of them were embedded in a clinical or research team. The embedded librarian is another expression of the move to integrate information expertise and knowledge within workplace teams or projects, and not be dependent on functioning from the physical entity of the library, nor necessarily library management reporting lines (Shumaker, 2009). In discussing embedded librarianship Wu and Mi (2013) suggests the use of a framework rather than using definitions as a solution to understanding the role. The use of such a mechanism allows the role to meet contextual needs but gives a measure for different levels of service and assimilation. Roper (2015, p. 20) suggests the clinical librarian service "by definition" is not offered to all departments – rather it has become a "menu" from which department pick the elements which best fit. However he also argues that there needs to be more robust rationale for service uptake and not be dependent on relationships or political or cultural factors.

6.6 Spaces and point of need

In a time when it might be expected librarians are less bound by space because technology has moved collections to electronic storage and access, especially in health and medicine, the reality is otherwise. Librarians remained tied to the library as a physical entity and a service point. Partly this is because library collections do still contain print items and these have to be housed, managed and kept secure; but with the decline of the physical collection the library now places emphasis on being a space for retreat, study and access to the facilities such as computers, that allow staff to remove themselves from their clinical workplace. Libraries have become repurposed as social, collaborative learning and study places (Ludwig & Starr, 2005), but still spaces managed by librarians. For a role in which skills, knowledge and relationships are the valuable features, the ability to be flexible and visible are not best facilitated by service point rosters and fixed opening hours. Librarians know they need to push outside the library space and many are, but as a profession it needs to be coupled with increased creativity about how to do so "set free from physical containers" (Plutchak, 2012, p. 13) and print-driven service designs.

Brettle et al. (2011) suggests that point of need for clinicians has moved away from the librarian being physically present in the clinical workspace as they detected a move towards remote or electronic service delivery, however there remains a need for the service to be proactive. This is also a finding by Lewis et al. (2011) that health managers in their survey viewed librarians as lacking a proactive approach which was leading to them to being sidelined in a dynamic environment. An opinion piece in the Lancet comments on the lack of librarians in health teams despite the growth of multidisciplinary teams, and asks “Is this the result of arrogance, ignorance, or lack of effectiveness?” (Summerskill, 2005, p. 13). There is a need for clinical librarianship to take the initiative with the scope of practice and competencies of the role so that it remains a vigorous partner in health services and does not become subsumed by other health information practitioners and systems.

6.7 Standards

The clinical librarian role is noted for the diversity of activity and skill (Harrison & Sargeant, 2004; Tan & Maggio, 2013). Systematic reviews, critical appraisal and instruction are just some of those activities, besides literature searching and content management. Currently in Australia there are no medical or health librarian speciality degrees or training. Likewise there are no formal accreditation processes for health librarians although the Health Libraries Australia group have instigated a voluntary continuing education scheme. Formal recognition of skill attainment and maintenance can only enhance professional standing and growth, as well as acceptance and respect from colleagues in the clinical arena. The need for standards and education for clinical librarians are raised as issues overseas as well (Wagner & Byrd, 2004). Within the library profession there is a long ongoing debate on general versus specialist knowledge. Many health librarians regard the subject knowledge gained through experience on the job as adequate enough to function effectively (Lewis, 2009). However as has been mentioned, there are areas of knowledge that librarians working health either do not have, or lack confidence in, such as numerical, statistical and analytical skills (Petrinic & Urquhart, 2007; Ward,

2005). Studies also show a perception of need for health sciences knowledge as well as health services systems and management, health research and communication and teaching skills (Petrinic & Urquhart, 2007; Ward, 2005).

6.8 Informationist

An iteration of the clinical librarian is the informationist role that resulted from a perception other skills would be useful for information support in the clinical team, and that the role needed to be integral within, and report to, a clinical team (Davidoff & Florance, 2000). The argument was not only for information skills but biomedical, epidemiological and numerical knowledge, such as statistics, as being essential in order to function effectively and authoritatively (Oliver & Roderer, 2006). Although the term is used as though it synonymous with clinical librarian, it is not if it is accepted that it has different qualifications, it is not a library report and synthesis or provision of an answer is the end result of an information request (Rankin et al., 2008). The informationist role does not seem to be in evidence in Australia, despite an early study into the feasibility and pilot of an informationist service in a hospital in South Australia.

6.9 Conclusion

The role of clinical librarian in Australia that arises from the findings is one of a librarian with the usual or standard skill set of those librarians in “special libraries” – that is libraries that serve particular departments or organisations. In and of itself, the role of clinical librarian is not distinct in terms of special skills or activities from most other medical or health librarians. Clinical librarianship was referred to as being a program by Lamb (1984) and this is a word that much of the US literature still uses in relation to clinical librarians. This suggests she did not conceive it as a role but a service. The distinction of clinical librarianship lies in the relationship and setting. It is a special librarian role defined by the client group. And because the relationship is the defining feature, then the way in which the individual librarians undertake the role

will be reflective of that, and hence the range of librarians identify themselves as being clinical librarians, whether or not that is their job title or their actual activity.

There are consequences when a role is so open to interpretation. As Harrison and Sargeant (2004) point out a position title alone is not necessarily sufficient indication of expertise, and that specialised training might be required in order to be accepted in multi-professional teams. Clinicians and other health professionals might reasonably expect some formal demonstration of skill or knowledge such as professional accreditation or benchmarks. Although participants in this study and others acquire knowledge on the job and are able to function at an acceptable level such that their services continue to be requested, it does not guarantee that the abilities and skills are equal amongst them. There is a big learning curve for those librarians who make the change to the health environment but no transparent external measures with which to have the confidence that their acquired knowledge is appropriate and adequate, or that allows a librarian to demonstrate greater or lesser competency than another.

A comment from one participant in the survey expressed the opinion the experience of the clinical librarian in Australia was probably not comparable to that in the United States or the United Kingdom, however aspirational. The health system in Australia has a mix of public and private health care services as well as federal and state government involvement, with state governments managing hospitals (Duckett & Willcox, 2011; Krassnitzer & Willis, 2016). This differs from the United States and the United Kingdom. There is a lack of tertiary level specialty training for health librarians and robust continuing education programs, and there is no external accrediting body, which along with the structure of the health system itself, contribute to the Australian contextual differences (Hallam et al., 2010; Ritchie, 2008). Nor is there a leading body here that is to equivalent to the National Library of Medicine in the United States (Ritchie, 2008). Much as there is interest in the role and there are practitioners, the scale is smaller both in terms of the number of librarians and also the size of the institutions and health systems. There is a hybrid approach to information services outreach that remains firmly library based. Clinical librarianship

is focused on the clinical clientele but the role is still strongly aligned to library and information science.

Lamb's original notion in the early 1970s to have librarians fully accepted as members of clinical teams has not yet been realised as common practice, at least not in Australia. In a time when a greater emphasis on project based work practices and multidisciplinary teams is being seen as essential for effective organisational practices, roles for librarians in health care teams should be desirable, if not inevitable. It will require, however, librarians in the health environment to make collective decisions about their level of education including numeric skills, depth of subject knowledge, willingness to articulate and define levels of competency, and whether or not to embrace a more active participatory role in filtering and synthesising the findings of search results. Without taking a vigorous approach to articulating and being responsible for the skills and knowledge that librarians possess, the likelihood of ceding ground to technological developments and other professional groups in a competitive dynamic field such as health is very possible. Wagner and Byrd (2004) concluded in a systematic review there were still questions to be addressed as to the most effective settings for clinical librarians to operate in, the types of service adaptions required in response to health care delivery changes, and the attendant training and skills sets required. In addition, there was the need for recognised standards with which to evaluate clinical librarian services or programs. These questions remain relevant and pertinent some thirteen years later.

6.10 Chapter summary

The clinical librarian role in Australia was found to be functioning predominantly as an outreach service from a library. As has been found in other studies, the same problems with role definition and role titles are present here. However, even though the many respondents were library-based there was still a clear focus for them on the clinicians and their information needs.

Professional knowledge was found to be a significant feature of the role from the findings and contributes to the value and expertise the clinical librarian brings to the provision of health care in Australia. Literature searching was found to be a central activity and there was agreement of the importance of communication and relationship management. Attendance on the wards was not a routine activity but there was involvement with journal clubs and meetings.

The lack of tertiary level specialty training for clinical librarians and accreditation processes poses issues for standards of expertise and practice. The ongoing lack of clear definitions for clinical librarians hinders the promotion and development of the role within health care.

The next chapter summarises the thesis, discusses the strengths and limitations of the research and suggests areas for further investigation arising from the findings of this study.

7 CONCLUSION

7.1 Introduction

This chapter summarises the thesis and describes how the study is relevant for health librarianship, its strengths and limitations and suggestions for future directions.

7.2 Summary of thesis

This pragmatic mixed methods study is an investigation into the role and function of the clinical librarian in Australia. It is a role that has been in practice for some forty years in the United States and originated to improve timely retrieval of information to support patient care and to establish the medical librarian as part of the health care team. Although there is general criticism that much of the research in this field has been weakened by poor design making it difficult to demonstrate effectiveness or direct impact on patient care, the studies showed the service is used and liked by clinicians (Brettle Maden & Payne 2016). The introduction of the role in Australia is more recent than in the United States and the United Kingdom and, while there are librarians working in such roles, what is known about how it is practiced is scarce in the published literature. The thesis aims to inform health librarianship by seeking descriptive data as a first step to building knowledge of the role in this country.

The picture of a clinical librarian that emerged from the research is that of a librarian who has a special responsibility to support clinicians. The role requires library and information science knowledge and skills, in particular the ability to undertake literature searches. The librarian is based in a library, most often within a hospital, and provides outreach to clinicians through various avenues that include journal clubs, clinical or department meetings, and ward rounds. In addition, they undertake educational activities such as training in database use and related information skills. It appears the norm is that clinical librarians are not embedded within clinical teams,

and that generally they deliver information to clinicians without having summarised or created a digest of the results. They may have appraised, however, the appropriateness of the levels of evidence of the literature retrieved in a search. They are concerned with establishing relationships with their clinicians, bringing their professional expertise in information management to the wider organisation and contributing to overall patient care delivery.

7.3 Strengths of the research

A sequential, explanatory mixed methods design was used in this research. This approach is realistic for a project in which there was one researcher with a set amount of time in which to conduct the study. This approach also enabled a richer picture of the situation as it gathered both quantitative and qualitative data. The survey gathered information about settings, activities and skills and this descriptive data was enhanced by the interviews, which allowed for more in-depth insight into how the role is experienced. The many activities of the role whilst important are not, alone, enough to convey the relational aspects, which are such a strong feature.

7.4 Limitations of the research

As with any research there are a number of imitations to this study. Piecing together a clear picture of the way the role is conducted in the Australian health system is constrained by the variables of terminology, settings and conceptions of what a clinical librarian is and does, and participation rates.

The number of participants for the survey and the interviews were small. The sample size is unknown so it is not possible to determine the response rate. In total, only twenty-one embarked on the survey and of this twenty-one, only twelve respondents completed the survey. It was anticipated the rate of participation would be low, as anecdotally there are not many clinical librarians in Australia. Information from the 2014-15 census of Australian health libraries suggests a possible figure of thirty

library services offering a clinical librarian or “informationist” position (Kammermann, 2016b). The number who responded to the invitation for the follow up interview was, disappointingly, low. The generalisability of the results from this study consequentially should be regarded very cautiously.

The quantitative part of the project sought to find out about the clinical librarian role by using a health library e-list to recruit participants to undertake the survey and possibly nominate to be interviewed as well. The definition used to guide the decision by respondents to participate was written to avoid specific job titles, as overseas surveys had found the clinical librarian role to be expressed in varying position titles. The expectation was the combination of the wording “roles and functions of clinical librarians” with “part or all of your time in the clinical setting” would be enough guidance that clinical librarians were being sought as participants, or at least information professionals who were working with clinicians outside of the library setting. Some of the participants however did not appear to meet this criteria because, for example, they held paraprofessional positions or because they were not in outreach positions. While this can be regarded as a strength of the research in that it includes a new set of participants whose self-perception is that they are clinical librarians, at the same time it might also be a weakness of the survey recruitment design.

This approach of an open recruitment to participate differed to that of much of the research described in the literature where a more usual approach has been to target a clinical librarian group or forum in which to conduct investigations. A targeted participant group may have yielded data more pertinent to the role under investigation, however time constraints for this study did not allow the researcher to undertake such an approach to recruitment. Comparisons with the findings of other research on the clinical librarian role are possibly hampered by this difference.

7.5 Contribution to health librarianship

The contribution of this thesis is to provide detail about the role as it is undertaken in Australia, as there has been little to date in the literature. It provides a base with which to compare the role in Australia with the role elsewhere. It also provides a base with which to consider this specialist library position with other information positions within health services in this country.

There is continued interest in the clinical librarian role as it offers health libraries a way to tailor outreach services to support evidence-based patient care. Health information is not static and clinicians continue to need access to sources of published information, and assistance with managing information from an ever-increasing knowledge base. Currently generalised published information is still the domain of the library profession. Health librarians are continually under pressure to demonstrate their value to the organisations in which they operate. The ability to build relationships, develop partnerships and devise programs are key activities which contribute to that value. The clinical librarian is one role that focuses on relationships as a core activity.

7.6 Implications and future directions

The findings in this study are broadly descriptive and indicative of the activities, skills and knowledge of clinical librarians in Australia. In the results a theme appeared around the level of knowledge and skills possessed by the participants. In their view their performance was at an advanced level. The difficulty is providing an objective measurement or demonstration of this advanced proficiency. The development of standards for skills such as literature searching, critical appraisal and instruction would assist in creating common measures with which to benchmark. It would help promote knowledge about, and thus increase value of those skills. The ability to be explicit about the contribution of information management to the clinical workplace is important if evidence-based practice is to be supported and for colleagues in

multidisciplinary teams to understand how the skills and knowledge contribute to their provision of patient care.

There is an opinion in the profession that health librarians would benefit from a certification scheme. The argument is, given other health professionals have been required to be registered or certified, so too should librarians as this would improve standing with clinicians and health administration (Baker, Kars, & Petty, 2004). Health librarians themselves are clear about their knowledge and skills and the contributions they make to health care. Clinical workplaces are robust and multidisciplinary. If librarians are to join the clinical team they have to be able to hold their own, advocate for and deliver a service. But it will be necessary to have standard job title and position descriptions as part of this process. The potential for certification is to give greater authority to their interactions with other health professionals, and may lead to greater visibility and acceptance. In 2013 the Australian Libraries and Information Association introduced a voluntary Certified Professional (Health) scheme to recognise commitment to continuing professional education. As yet the certification is not a prerequisite for holding a clinical librarian position.

Clinical librarians have yet to achieve full acceptance as members of the health care team. If the competencies for health professionals include the ability to be patient centred, collaborative, understand partnerships, safety and quality, and be able to use technology to use and share information (World Health Organisation, 2005) then librarians are both able support such competencies as well as possess them themselves. Ritchie (2015) believes health librarians are health care workers and not adjuncts. Their identification and goals are the same as those of the health care service within which they work.

The technologies in information and the sources of information in health are sophisticated, complex and challenged by compatibility, and there is a large health and clinical informatics workforce supporting health services. As has been identified by Health Libraries Australia, understanding and mapping the scopes of practice for

health librarians and other health information professionals is an important activity (Blackwood & Bunting, 2016). As the prominence of technology in the health care continues to broaden it is essential to understand how clinical librarians, health informaticians and clinical systems interact and overlap.

Clinician workloads are immense and whichever way clinical librarians decide to collaborate and partner with clinicians the activity must enhance delivery and provide information in formats or programs which effectively meet the needs of the user. Research by Brettle, Maden & Payne (2016) suggests that research, continuing professional education and decision-making are areas in which clinical librarians have had greater impact. Investigation of the ways in which clinicians in Australia would prefer to collaborate with librarians would be useful for the development of the clinical librarian role. So too is whether there is a role to support patients. Traditionally health librarians working within hospitals in Australia have not had a health consumer focus but developments in patient-centred care and partnering with patients might lend itself to clinical librarians taking an active role.

The clinical librarian has been described as complex intervention (Brettle et al., 2016; Harrison & Beraquet, 2010; Tan & Maggio, 2013). The role requires a combination of skills, knowledge and attributes, and the environment in which it operates has many factors and influences that make it difficult to directly measure the impact of the clinical librarian service on the provision of health care. This study has not been able to assist with further defining the clinical librarian as the role here, as elsewhere, seems to be a contextually responsive library outreach service.

The implications from this research suggest three areas for further examination. An investigation into benchmarks to assess levels of expertise for literature searching, and critical appraisal is needed. As has been identified in this study although clinical librarians regard their skills and abilities with literature searching to be at an advanced level, there are no external, formally approved standards for searching at an expert level. Critical appraisal is a skill that would be strengthened by consensus on what it entails and levels of approved standards for competence. To have

education and formal accreditation for these skills will improve professional standards, enhance standing with other health professionals and assist in promoting the value of the clinical librarian to the organisation and patient care.

The scopes of practice and opportunities for collaboration between clinical informatics and clinical librarianship are worth examination. Technological development in publishing and clinical systems will continue to have impact on all information professionals in health and medicine. Understanding the skills and knowledge of each profession, as well as particular strengths, can provide opportunities to collaborate and partner to improve information delivery and literacy of clinical professionals.

As suggested by a participant in the study, and also identified in the literature, there is scope for clinical librarians to develop services to support patients. To date in Australia this has not been a field in which health librarians in hospitals have been active. However, expectations of patient-centred care, challenges with health literacy and the need to be adaptive to changing health services suggest this as an area for investigation, and might prove to be a rewarding and valuable service for clinical librarians to develop.

Clinical librarianship is a service role that contributes knowledge and skills that are unique in the health setting, and which enhance evidence-based practice and clinical decision-making. The value of the expertise offered through such programs will continue to be important to the management and delivery of modern health care.

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APPENDIX 1

Survey

Structures

Q1* What is the title of your current position?

Q2 In which year was this position created?

Q3* Who do you report to?

- Library manager/supervisor
- Clinical department manager/supervisor
- Research department manager/supervisor
- Medical/nursing manager/supervisor
- Clinical information systems/Information technology manager/supervisor
- Other (please specify)

Q4* In which type of health facility are you based?

- Public teaching hospital
- Public hospital
- Private hospital
- Other (please specify)

Q5* What is the primary objective of your role?

Q6* How many staff, including yourself, are in your department/service?

- 1 staff member
- 2-3 staff members
- 4-6 staff members
- 7 or more staff members

Q7* Which model best describes your current position?

- in a library and work in a clinical setting on a regular basis (attending rounds, patient team meetings etc)
- in a library providing outreach services (literature searching, information skills training) without clinical attendance
- working entirely as a member of a medical/clinical team (ie. embedded)
- Other (please describe)

Activity and skill

Q8* Please list the 3 principle skills/knowledge you consider are essential in your position

1

2

3

Q9 Which personal attributes do you think are useful in a clinical librarian role? please describe

Q10* Please rate the following activities in terms of importance to the role you perform

	Essential	Fairly important	Important	Slighty important	Not important	N/A
Literature searching						
Critical appraisal or information synthesis						
Retrieving and supplying articles						
Providing search skills/information literacy training						
Managing e-resources						
Alert /SDI/current awareness services						
Relationship management						
Research support [grant writing, co authoring, manuscript preparation, data management]						
Promotion of library/information services						
Other (please specify)						

Q11* Please rate the following skills/knowledge in terms of importance to your position

	Essential	Fairly important	Important	Slighty important	Not important	N/A
Oral and written communication						
Computer and electronic literacy						
Development of retrieval strategies and techniques						
Instructional/teaching knowledge						
Understanding of users requirements within the clinical setting						
Understanding of users requirements within the research setting						
Social media competence						
Critical appraisal						
Other (please specify)						

Q12 If critical appraisal is part of your role, please describe what this entails

Clinical outreach

Q13* In your role how often do you participate in the following clinical activities?

	Daily	Weekly	Fortnightly	Monthly	Never	N/A
Clinical committee/departmental meetings						
Ward rounds/bedside rounds						
Case conferences Grand rounds						
Journal clubs						
Other (please specify)						

Q14 Please list the departments or specialties that you support

Q15 If you are part of a patient care team, which other health professionals also participate on that team?

Consultants/Registrars

Residents/Interns

Nurses

Allied health professionals

Medical/nursing or allied health students

Executive/management

Other (please specify)

Q16* During an average week how much time would you spend in the clinical setting?

Q17 Did you have a clinical background prior to undertaking your current position?

Yes

No

If yes, please outline

Q18 *How did you acquire knowledge of the clinical work environment? please tick as many as apply

Self taught/on the job

Short courses

Formal clinical qualification (eg. nursing, medical, allied health, bioscience)

Clinical mentor/s

Other (please specify)

Q19 Do you have a mentor or champion who you work with in the clinical setting?

Yes

No

If yes, please give the their job title

Q20* Please rank in order of most used the following methods for requesting for information/literature searching

Rounds (eg. ward, bedside, grand)

Meetings (eg. clinical team, department, mortality)

Online forms

Email

Telephone

In person

Q21* When you respond to a clinical query, which content do you supply to the clinician

	Always	Often	Sometimes	Never
Bibliographic references				
Bibliographic references with active links to the items online				
Search strategy				
Topic summary or digest of the results				
Full critical appraisal of the results				
Statistical analysis of the results				
Other (please specify)				

Q22* How often would you provide training to clinicians in the following topics/skills?

	Frequently	Often	Sometimes	Occasionally	Never	N/A
Database searching/features						
Search strategy construction						
Advanced searching techniques						
Reference management						
Evidence based practice						
Critical appraisal						
Research impact/profile						
Other (please specify)						

Q23* What does the term "clinical" mean to you when it is included in a position title for a librarian or informationist?

Q24 Briefly what would be the main goals you would like to achieve in your role over the next 3 years?

1

2

3

4

5

Q25* Do you routinely measure the performance and effectiveness * of your role?

Yes

No

If yes, please describe your measures

Demographics

Q26* In which state are you based

Australian Capital Territory

New South Wales

Northern Territory

Queensland

South Australia

Tasmania

Victoria

Western Australia

Q27* For how many years have you held your current position

12 months or less

more than 1 year and less than 2 years

more than 2 years and less than 5 years

more than 5 years and less than 10 years

more than 10 years

Q28* Please indicate the highest level of qualification you have attained

Bachelor degree

Graduate certificate

Graduate diploma

Master

PhD

Other (please specify)

Q29 In what disciplines or subject domains are your qualifications?

Q30* In what capacity are you employed in this position

Full time

Part time

Fixed term contract

Other (please specify)

Lastly

Q31 Is there anything further you would like to say about your role or the role of clinical librarian

APPENDIX 2

Interview questions
Project: The role and function of clinical librarians in Australia
Follow-up interview schedule

Introduction
Hello my name is Caroline Yeh. Thank you for agreeing to be interviewed today. The interview will take about 30 minutes if that's ok.

You will have read the information about the project when completing the online survey. Just to recap this interview forms part of my masters research project investigating the role of the clinical librarian in Australia. I am a student at the University of Tasmania, and this project has received ethics approval. The purpose of the interview is to explore your experience as a clinical librarian.

The interview will be recorded with your permission; otherwise I will take written notes. The transcription will be undertaken by me. The interview will be recorded with a number so that your statements will remain unidentified. The transcripts will only be viewed by myself and my supervisors.

Can I confirm that you are happy to consent to the interview?
You are free to withdraw from the interview or the project at any stage.

<u>Interview questions</u>

- Would you describe your role and functions and some background as to how this position was established in your organisation?

- What services do you perform/provide and for whom?

- How would you characterise the model of service for your position? [outreach…Q&A…]

- Please outline the activities you perform that are most significant in terms of time?
- And if you now consider activities in terms of impact which would be the most significant?

- What have been your processes to acquire knowledge or skills to perform you role?

- Besides formal qualifications and skills, what else contributes to the successful performance of your role?

- Would you describe a recent interaction with a clinician who had information request and what you did to meet their need?

- How would you perform and/or develop your current role if you had total freedom to shape direction?
- What for you is the distinguishing feature of the role you undertake?

Conclusion

Thank you, we have come to the end of the interview. I appreciate your input.

You can contact anyone on the research team of this project if you want to discuss further thoughts or concerns.

APPENDIX 3

Literature review search strategy

A literature search was conducted in September 2014 using the following databases

Medline on Ovid

CINAHL plus Full Text

Scopus

Library and Information Science Abstracts (LISA)/ProQuest Library Science

A keyword approach to the search strategy was undertaken to tease out the clinical librarian role in the literature, although some subject headings were utilised. It also allowed the terms to be used across the different databases. The narrow focus of the topic required several iterations of the search strategy as new job titles were uncovered – for example information specialist in context. The search strategy limited the results to the period January 2000 to September 2014. The search was conducted again in 2015 and 2016 to check for new literature.

Google Scholar was used to search for literature that is outside the scope of the databases used in the search strategy. This was particularly important as the literature on the Australian context is scant and conference papers found on Google Scholar had not been indexed in the proprietary databases.

In addition to searching the grey literature, hand searching was also undertaken. The reference lists of studies were used to identify other research not found in the search and to confirm the body of literature retrieved in the searches was being cited as relevant studies for the area of interest.

Search terms

Keywords	("clinical librarian*" OR "clinical medical librarian*" OR "clinical outreach librarian*" OR "outreach informatician*" OR "clinical informaticist*" OR "clinical informatician*" OR "clinical informaticist*" OR "biomedical librarian*) AND

	((clinical OR hospital*) OR "medical librarian*" OR "medical hospital librarian*" OR hospital librarian*)
Keywords	Clinical librar* OR clinical informationist* OR medical librarian* OR hospital librarian* OR embed* librarian* OR informatics service* OR outreach librar* OR information specialist* OR knowledge broker* OR biomedical librarian* OR knowledge support librarian* OR clinical support librarian* OR clinical inform* librarian* OR clinical outreach librarian* OR medical outreach librarian* OR nursing librarian* OR nursing outreach librarian* OR clinical research librarian*
Keywords	“information specialist in context” OR “information N2 context”
Subject headings	Hospital libraries OR "Clinical medical librarianship concept" Librarians Libraries, hospital/ or libraries, medical/ or libraries, nursing Library Services/ Clinical librarianship Health sciences librarianship
Keywords & subject heading	“Clinical round*” OR “hospital unit*” OR “hospital ward*” OR “hospital floor*” OR “patient care” OR “point of care OR daily round*” OR bedside round* OR patient round* OR “morning round*” OR “case conference*” OR “morning report*” OR “handover*” OR “shift report*” OR patient care team [MeSH]
Keywords	setting* OR context* OR embed* OR practice OR situat*
Keywords & subject heading	Role OR roles OR position* OR professional OR activit* OR job OR jobs OR skill OR skills OR model OR models OR posts OR demograph* OR characteristic* OR title* OR professional role [MeSH]

Limits	Language – English Date range - 2000+

Originally the decision was a date range from the year 2000 to present, however the nature of the topic led to a revision of this filter as there were significant articles that needed to be referenced to understand the development of the role of clinical librarian.

The literature reviewed included systematic reviews and primary studies that examine the role and function of the clinical librarian. Quantitative, qualitative and mixed methods studies were reviewed. Surveys, semi-structured interviews and service evaluations were the most common tools used in the primary studies. The literature review retrieved five systematic reviews that are referenced in the thesis.

It was decided to include opinion or editorial pieces if they raised issues of pertinence that added to the understanding of roles and functions of the clinical librarian.

If studies were concerned with value, effectiveness and implementation of a clinical librarian service or the position then the role/function had to form a significant component of the discussion or results.

The clinical librarian position had to be based in a hospital setting. Positions that were in primary or community health, academic libraries or research were excluded. The position could be operating from a library service or wholly within a clinical department however there had to be a component of time spent with clinicians during their provision of patient care – in other words the role had to be more than traditional library outreach or remotely provided literature searching or question and answer services.

GLOSSARY OF TERMS

Academic liaison librarian

Liaison librarians work in the tertiary education sector and provide outreach services to academic staff and students, developing subject knowledge for the disciplines they support, which can include allied health, medicine, paramedicine and nursing.

Australian Libraries and Information Association (ALIA)

The national professional body for the Australian library and information services sector. Membership includes individuals with library and information science qualifications, libraries and individuals with other disciplines who work in the library and information sector. The aim of ALIA is to represent and promote the profession through the development and delivery of quality library and information services to the nation.

Clinical librarian (CL)

Also known as clinical medical librarian or CML

The clinical librarian supports clinicians with the provision of information services and skills at the point of decision-making, in the clinical workplace. In this role the clinical librarian works outside the library and develops strong relationships and knowledge of the clinical areas they support. It is a specialist position within medical librarianship.

Health librarian

Health librarians can work in many areas of the health system, including government and non-government organisations, tertiary education, consumer and policy groups. They may also work in general library settings such as state or public libraries providing health information services. The term health libraries can be used very broadly and often includes hospital libraries.

Health Libraries Australia (HLA)

HLA is ALIA's national group for members working in the health sector. The role of HLA is to promote, inform, influence and unite libraries and information professionals in the health and biomedical sector through professional development, research, networking and collaboration, advocacy and promotion.

Information Specialist in Context (ISIC)

Health professional who has both clinical and information science knowledge and skills. The term was introduced in 2002-2003 by the Medical Library Association (USA) to reflect the diversity of settings in which informationist can work.

Informationist

Also known as clinical informationist

Term introduced in 2000 by Davidoff and Florance to promote the idea of a health professional who had both information science skills and clinical knowledge, and who worked within the clinical teams.

Medical librarian

Medical librarians work in hospital libraries providing information services and resources to the staff. They support all staff with their information needs, providing resources, education and other information services from a library.